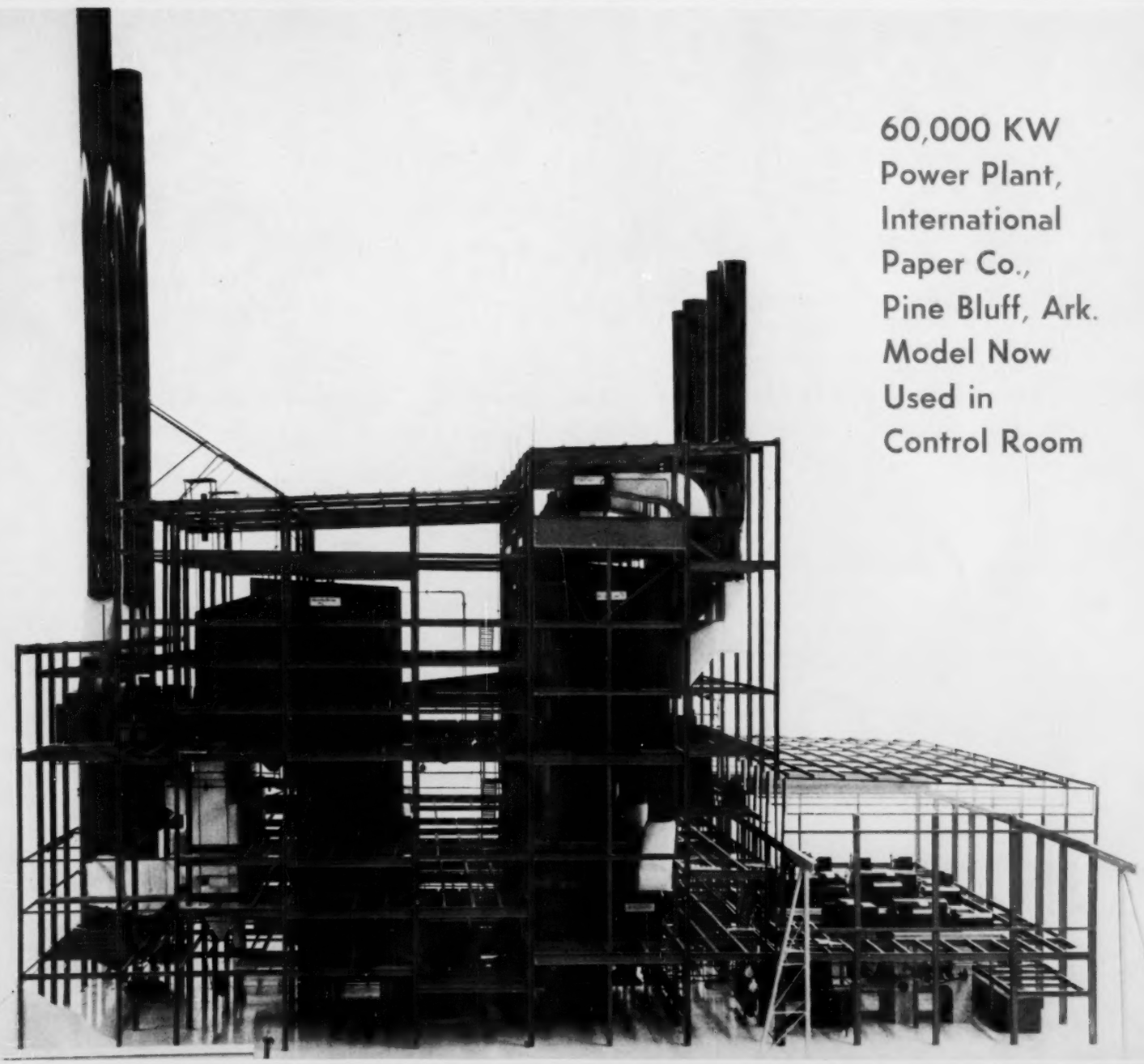
PULP & PAPER

DECEMBER 1958

1959 Looks Good — Kimberly page 55

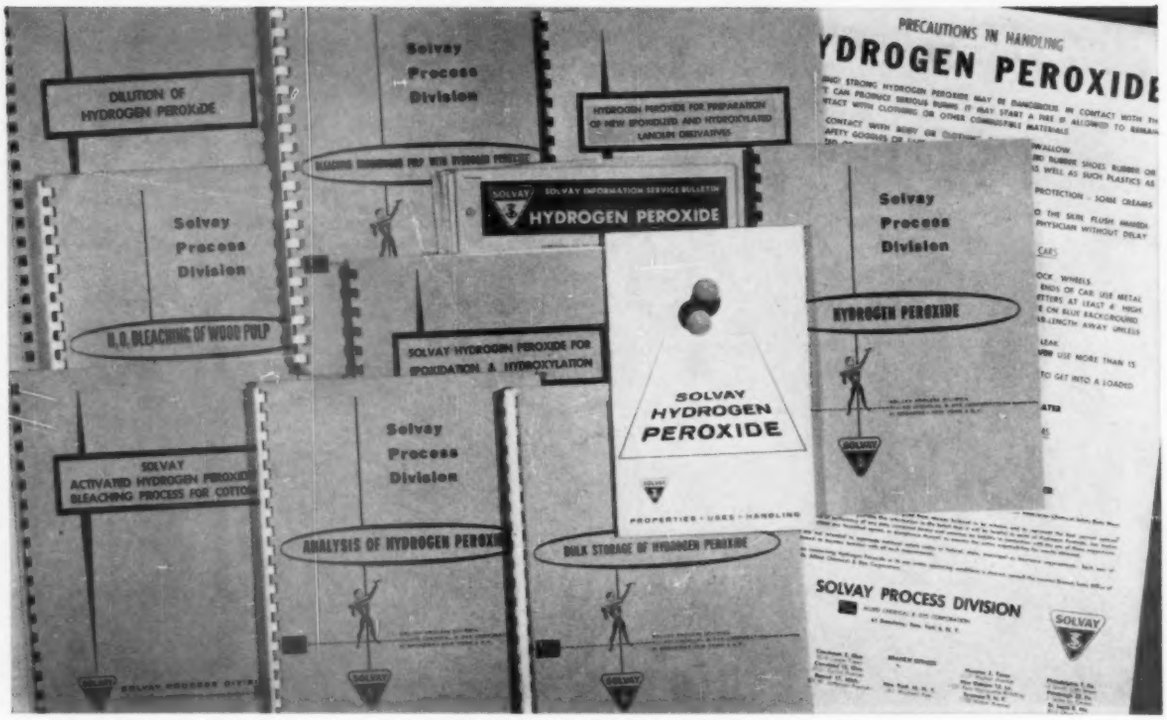
Automated Paper Mill page 58

New Info on Rain Forests page 112



60,000 KW Power Plant, International Paper Co., Pine Bluff, Ark. Model Now Used in Control Room

Whether they admit it or not, many paper companies are in power business, says Jack Judge of I.P. page 64



AVAILABLE TO YOU – TECHNICAL DATA ON
SOLVAY HYDROGEN PEROXIDE

To help you in your current operations—here is authoritative information on the analysis, uses, handling and storage of SOLVAY Hydrogen Peroxide. These booklets, bulletins and the wall precaution chart have been compiled from accepted sources, from SOLVAY's own research and from 77 years of field experience with chemical consumers in virtually every industrial category. Check the contents of the individual items—then check those that may be helpful to you on the coupon and mail.

HP-1—Solvay Hydrogen Peroxide: Physical properties, chemical reactions, shipping containers, handling, storage. 21 pages.

HP-2—Wall Chart: Precautions for handling hydrogen peroxide.

HP-6—Hydrogen Peroxide Bleaching of Wood Pulp: Applications and methods. 28 pages.

HP-7—Hydrogen Peroxide Bleaching of Groundwood Pulp: Chemicals used, analytical methods, bleaching operations. 15 pages.

HP-9—Hydrogen Peroxide Bulk Storage: Bulk shipping and storage equipment, equipment suppliers. 13 pages.

HP-10—Analysis of Hydrogen Peroxide: Analytical methods, reagents, indicators, standard solutions. 31 pages.

HP-13—Solvay Hydrogen Peroxide for Epoxidation & Hydroxylation: Up-to-date review and bibliography, methods, olefins used, present and potential uses of products. 8 pages.

HP-14—Solvay Activated Hydrogen Peroxide Bleaching Process for Cotton: Process description, operation details, commercial applications, cost and quality comparison. 7 pages.

HP-15—Dilution of Hydrogen Peroxide: How to dilute accurately, equipment and materials needed. 9 pages.

Sodium Nitrite • Calcium Chloride • Chlorine • Caustic Soda • Caustic Potash Chloroform • Potassium Carbonate • Sodium Bicarbonate • Vinyl Chloride • Methyl Chloride • Ammonium Chloride • Methylene Chloride • Monochlorobenzene Soda Ash • Para-dichlorobenzene • Ortho-dichlorobenzene • Carbon Tetrachloride Ammonium Bicarbonate • Snowflake® Crystals • Aluminum Chloride • Cleaning Compounds • Hydrogen Peroxide • Mutual Chromium Chemicals

Allied Chemical

SOLVAY PROCESS DIVISION
61 Broadway, New York 6, N. Y.

SOLVAY branch offices and dealers are located in major centers from coast to coast.

HP-16—Hydrogen Peroxide: Up-to-date review of properties, stabilization, manufacturing methods, purification and concentration (prepared on request for new issue of Encyclopedia of Chemical Technology). 20 pages.

HP-17—Hydrogen Peroxide for Preparation of New Epoxidized and Hydroxylated Lanolin Derivatives: Study of preparation methods and determination of reaction products' characteristics. 8 pages.

NO. 1-56—Information Service Bulletin: Directions and equipment for emptying drums of hydrogen peroxide.

NO. 8-1057—Information Service Bulletin: Directions for unloading tank cars of hydrogen peroxide.

NO. 6-56—Information Service Bulletin: Hydrogen peroxide in oxidation of vat dyes.

NO. 2-57—Information Service Bulletin: Hydrogen peroxide in finishing electroplated surfaces.

NO. 6-657—Information Service Bulletin: Hydrogen peroxide in foam rubber manufacture.

NO. 4-57—Information Service Bulletin: Hydrogen peroxide in shellac bleaching.

NO. 7-957 and NO. 9-1157—Information Service Bulletins: Hydrogen peroxide in wood bleaching.

SOLVAY PROCESS DIVISION
61 Broadway, New York 6, N.Y.

Please send me without cost the following SOLVAY Hydrogen Peroxide material:

☐ HP-1	☐ HP-2	☐ HP-6	☐ HP-7
☐ HP-9	☐ HP-10	☐ HP-13	☐ HP-14
☐ HP-15	☐ HP-16	☐ HP-17	☐ NO. 1-56
☐ NO. 8-1057	☐ NO. 6-56	☐ NO. 2-57	☐ NO. 6-657
		☐ NO. 4-57	☐ NO. 7-957

Name_____

Position_____

Company_____

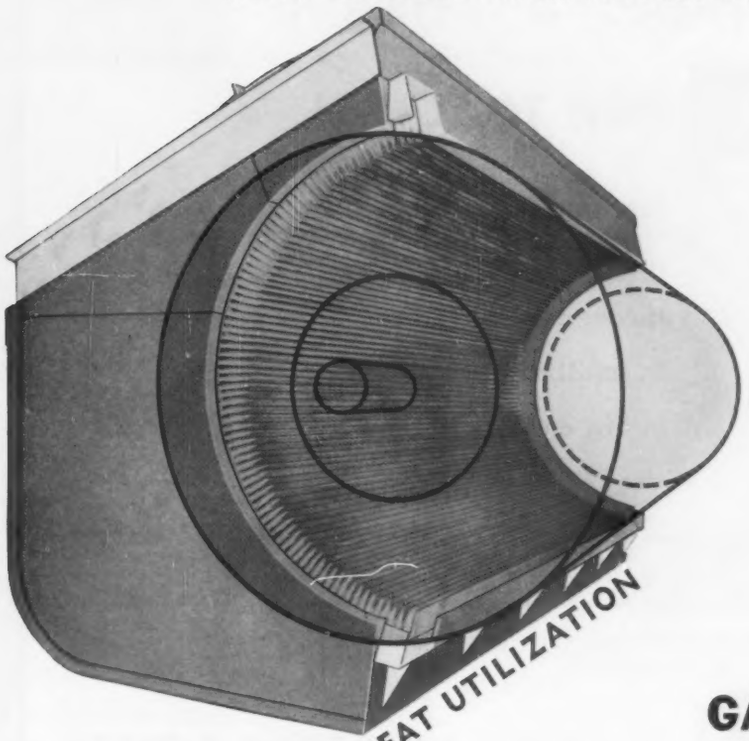
Phone_____

Address_____

City_____ Zone____ State_____

BG-128

OVER **600%** INCREASE IN DRYING RATES*



*92% EFFICIENCY IN HEAT UTILIZATION

THE
GARDNER DRYER

**Operational results from actual on and off machine coating installations*

The Gardner Dryer - - gives highest heat utilization efficiency and top drying rates through higher air velocity and controlled turbulence.

and . . . there's no damaging effect to the sheet, whether coated or uncoated.

GARDNER DRYER
RICE BARTON
OVERLY'S

RICE BARTON CORPORATION
WORCESTER, MASSACHUSETTS
Paper Machinery Builders Since 1837

PROBLEM: HOW TO SCREEN

(a) high consistency stock

(b) in large volume

(c) through slotted plates

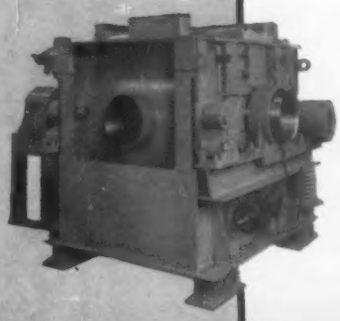
(d) in small space

(e) at low cost

SOLUTION: the BIRD VIBROTOR SCREEN

(a) handles pulp and paper stocks up to 2% or higher consistency.

(b, c) delivers up to 60 tons per day of 1.7% unbleached kraft or bleached sulphate through .012″ slots up to 80 tons of sulphate, 90 tons of mixed pine and short filtered stock; up to 150 tons of 2.0% deink through .012″ plates; 83 tons of 1.7% newsprint through .014″ plates.



(d) takes up one quarter or less floor space than old type screens.

(e) low power cost, minimum attention and maintenance, reduced stock handling cost due to ability to screen at high density.

Ask us to furnish layouts and estimates.

BIRD MACHINE COMPANY

SOUTH WALPOLE, MASS.

REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND, OREGON • ATLANTA 9, GEORGIA

Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

PULP & PAPER

Reader's Guided Tour

VOLUME 32
NUMBER 13

Up to 7% Production Rise Forecast for '59 55
Hartford City Upgrading Program 56
Fine Paper Mill Planned by Powell River 57
Chattanooga Meeting: The Automated Mill 58
New Hurlbut Mill Makes Specialty Paper 62
Industry Trend—More Power 64
Products, Volume Rise at Columbia River 71
Safety Council Gives Awards 73
Special Report on Hudson Tissue 74
Naheola: Another Mill for Dixie 80
Automatic Lube Cuts Costs for Gould 82

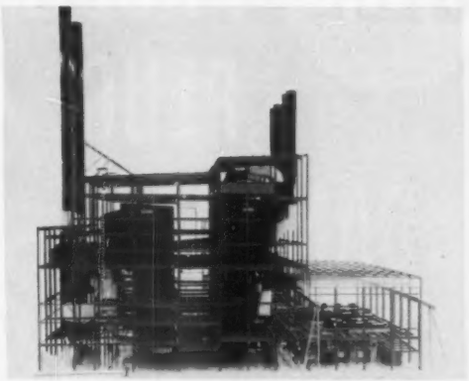
● PULPWOOD SECTION

Don't Sell Western Hemlock Short 112
Hudson Woodroom is Simple 115
Further Report on Cords/acre/year 116

● OTHER DEPARTMENTS

The Editor Reads His Mail 5
Monthly Report 7
World Pulp and Paper News 13
News of Associations 123
Strictly Personal—News of People 124
New Equipment Section 139
Meeting Dates Calendar 151
Advertisers Index 163
The Last Word—P&P Editorial Views 164

Compliments of the Season from P&P; "Wilderness" bill comes up again; Federal, state and private ownership in Alaska.



COVER PICTURE—This model of the power plant in International Paper Co's. new mill at Pine Bluff, Ark., is proving helpful to operators there. It is in the main central control room of the mill for all power-recovery operations for their observation and reference.

Trends in Mills to More and More Power 64
Jack Judge, coordinator of power plants and division power engineer for Southern Kraft Division of I.P., presents an illuminating report on where this industry is headed, and some points on present limitations.

Coming—Completely Automated Paper Mill 58
John Stephens of Champion gives Chattanooga meeting of Southern and Southeastern Supts a vision of things to come—a mill run with computers, tape schedules. West Va.'s Shoudy suggests "toughness" as a performance concept. Another topic—wire life.

Special New Mill to Make Special Papers 62
First specialty paper mill in New England since Strathmore's Woronoco (1912) is new Hurlbut plant near South Lee, Mass., where Rice Barton machine is major unit.

New Report on Hudson's Tissue Mill 74
For first time, some special features in this pioneering plant in Palatka, Fla., are described, along with new pictures by P&P Southern editor, Bill Diehl.

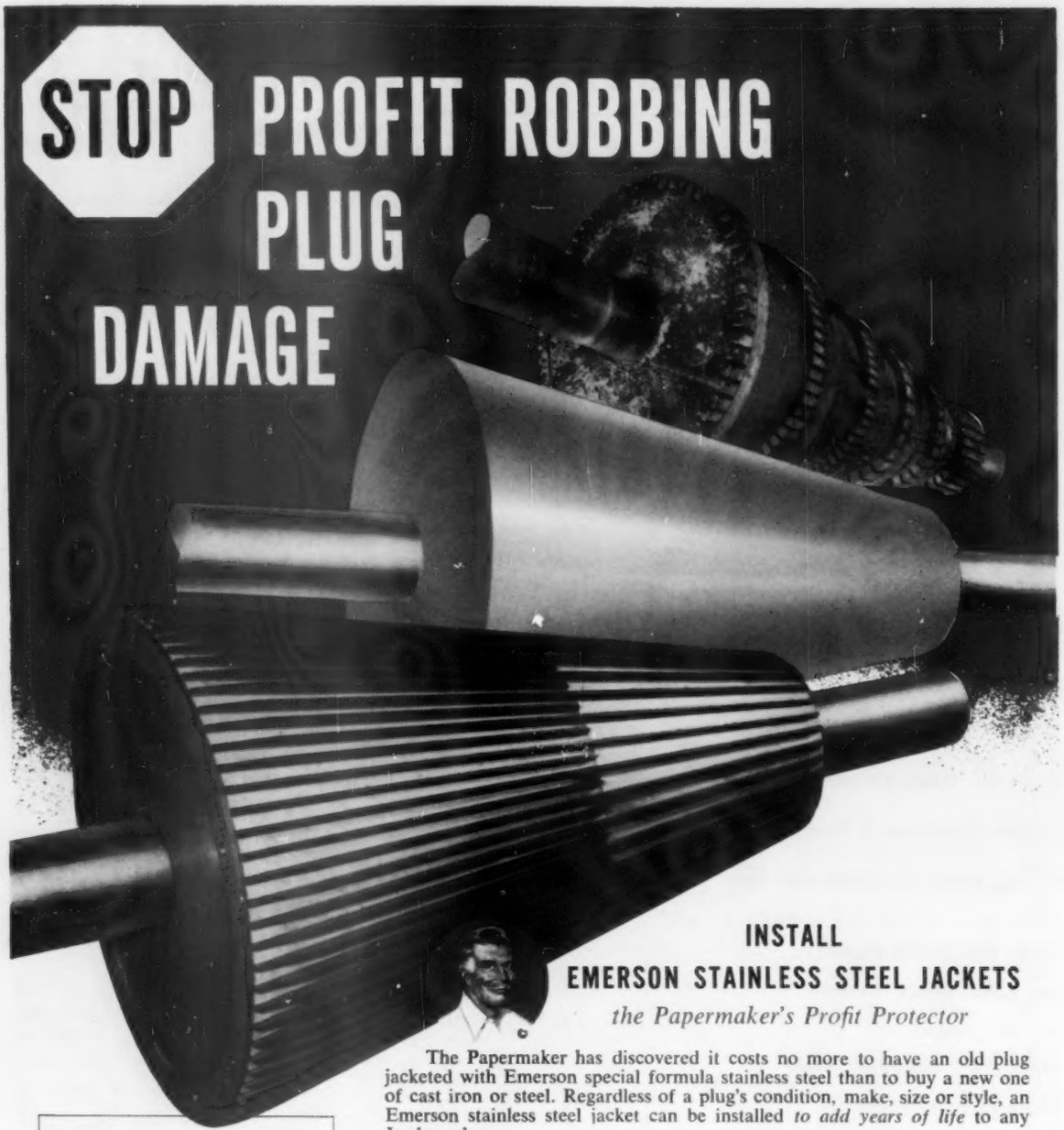
Remarkable Tree Growth in Rain Forests 112
New information on unusual growth records set by Western Hemlock in Pacific Northwest is disclosed in this article by Edward J. Dimock II, USFS.

CIRCULATION DEPT., 500 Howard St., San Francisco 5, Calif. C. C. Baake, Circ. Mgr. Send subscription orders and changes of address to PULP & PAPER, above address. Include both old and new addresses.
RATES (including World Review Number): U.S., Canada and Latin America—1 yr., $4; 2 yrs., $6; 3 yrs., $8. Other countries—1 yr., $5; 2 yrs., $8; 3 yrs., $11. Sterling area orders may be sent to: Harold P. deLooze Ltd., 7 St. James Square, Manchester 2, England.
POSTMASTER: Send form 3579 to Circ. Dept. PULP & PAPER.

PULP & PAPER is published monthly except July when publication is semi-monthly, at Bristol, Conn., by Miller Freeman Publications, Incorporated. Entered as second class matter, Dec. 4, 1951, at Post Office, Bristol, Conn., under Act of March 3, 1879. Editorial office: 1791 Howard St., Chicago 26, Ill.; advertising office: 370 Lexington Ave., New York 17, N.Y.

COPYRIGHT, 1958, by Miller Freeman Publications, Incorporated. Contents may not be reproduced without permission.

STOP PROFIT ROBBING PLUG DAMAGE



INSTALL
EMERSON STAINLESS STEEL JACKETS
the Papermaker's Profit Protector

The Papermaker has discovered it costs no more to have an old plug jacketed with Emerson special formula stainless steel than to buy a new one of cast iron or steel. Regardless of a plug's condition, make, size or style, an Emerson stainless steel jacket can be installed *to add years of life* to any Jordan plug.

Mills coast to coast stop structural damage and corrosion in Jordan plugs by having them completely encased in stainless steel. This exclusive Emerson jacketing process, as a maintenance investment, features new bandless, continuous slotted construction. Any size cutting edge may be used interchangeably in the same plug.

Besides beating plug damage and corrosion, Emerson Stainless Steel Jackets are extremely wear resistant and give far greater built-in strength to the plug. Fillings are changed more easily, more quickly, cutting downtime.

Is Jordan plug damage cutting into your profits? Write today. *The Emerson Manufacturing Co., Division, John W. Bolton & Sons, Inc., Lawrence, Massachusetts.*

AMONG PROMINENT USERS ARE:

- ★ The Champion Paper and Fibre Company
- ★ Container Corporation of America
- ★ Continental Can Company, Inc.
- ★ International Paper Company
- St. Regis Paper Company

BOLTON EMERSON
TRADE MARK

Filling the Needs of Papermakers: JORDANS • CLAFLINS • FILLINGS • PLUGS • STAINLESS STEEL JACKETS • BEATER BARS AND BED PLATES • SHOWER PIPES • SUCTION BOX COVERS • MAGNETIC SEPARATION EQUIPMENT • MACHINE KNIVES

PULP & PAPER

ALBERT W. WILSON Editor
MAURICE CASTAGNE Eastern Editor
WM. F. DIEHL JR. Southern Editor
LOUIS H. BLACKERBY Western Editor
RAUL RODRIGUEZ District Editor
C. L. SHAW Canadian Edit. Director
STUART F. LEETE District Mgr.
DOROTHY G. COUCH News Editor

RALPH R. DAVID Sales Manager
District Sales Managers

KENNETH A. JOHNSON Cleveland
ROY R. GRUNDY Chicago
LEIGH M. FREEMAN New York

STEPHANIE POLLITZER Prod. Mgr.

Correspondents Around the World

UNITED KINGDOM—Edwin F. J. Dean and F. H. Llewellyn Thomas; **FRANCE**—Jean Usse and R. Esselin; **WEST GERMANY**—Dr. Friedrich Dorn and Dr. E. Fischer; **FINLAND**—Juoko Koljonen; **NORWAY**—Ovvind Nossen; **SWEDEN**—Dr. Olle Andersson; **SWITZERLAND**—Siegfried Aeschbacher; **AUSTRIA**—Karl Adamik; **BELGIUM**—William F. Boks; **NETHERLANDS**—Henk Voorn; **DENMARK**—E. Persson; **ITALY**—Dr. Pietro Ghisone; **SPAIN**—Antonio de Sabates; **JUGOSLAVIA**—J. Zivkovik; **JAPAN**—Motoki Matsunaga; **INDIA**—Dr. R. V. Bhat and S. C. Laharry; **PHILIPPINES**—A. A. Adamson; **AUSTRALIA**—Dr. Wilby E. Cohen; **NEW ZEALAND**—A. R. Entrican; **SOUTH AFRICA**—Hans Baars and J. E. Henderson; **MEXICO**—Carlos Garcia Robles; **ARGENTINA**—Julio Cesar Lera; **BRAZIL**—Dr. L. J. Rys and Carlos Benko; **CHILE**—Francisco Schnake S.; **VENEZUELA**—M. Rivers; **URUGUAY**—Juan Carlos Raffo Fravega; **CUBA**—Armand Chavez Clavero; **TAIWAN**—Ni-Hung Chang; **ISRAEL**—M. D. Cohen.

A Miller Freeman Publication

WILLIAM B. FREEMAN President
LAWRENCE K. SMITH Vice President
MILLER FREEMAN JR. Secy-Treas.

Office of Editor
1791 Howard St.
Chicago 26, Ill.
ROgers Park 4-3420

Advertising & Production Office
370 Lexington Ave.
New York 17, N. Y.
MUrrayhill 3-9294

Atlanta 19, Ga.—2640 Winding Lane, N.E., ME 6-2385

Cleveland 3, Ohio—4500 Euclid Ave. EXpress 1-4180

Seattle 4, Wash.—71 Columbia St., MAin 2-1626

Vancouver 3, Can.—402 Pender St., W., MUtual 5-7287

Portland 5, Ore., 731 SW Oak St., CA 2-1314

San Francisco 5, Calif.—500 Howard St., EX 7-1881

Los Angeles 65, Calif.—3501 Eagle Rock Blvd., CL 5-7194

London, W. 1, England—Bernard W. Landsdowne, 130 Crawford St., WELbeck 3624

Köln-Kalk, Germany—Dr. Walter F. Vogeno, Kantstrasse 22

Manchester 2, England—H. P. deLooze Ltd.—7 St. James Square

MILLER FREEMAN PUBLICATIONS

The Editor Reads His Mail

Address letters to The Editor, PULP & PAPER, 1791 Howard St., Chicago 26, Ill.

One Palm Tree Doesn't Make a Jungle

—Montreal.

Editor: In your article on the Mogi Guaço, Brazil market pulp mill being partly financed and to be wholly operated by Champion Paper & Fibre Co., I don't know where you got the 'jungle" idea. The only tree on the mill site was a palm. Soon a new express toll highway will go right through Mogi Guaço and now you can drive out from Sao Paulo without getting your shoes dirty—except, of course, during the rainy season. The jungle is a few hundred miles further north.

By the way, a new site for the mill was selected across the river from the original location, allowing for a more progressive expansion in the future.

A. T. HURTER
President
Stadler Hurter International Ltd.

Introducing Japanese Youth

Editor: I am a high teen Japanese and I am working in a very large paper manufacturing plant in Japan. I am a finisher and operator of winders. I have been reading PULP & PAPER and many of the technical books from America on paper manfacturing. I complete high school in March but I have learned highest technical information. For many years I have wanted to work in America. Please introduce me to your paper manufacturers.

SAICHI TADOKORO
70 Oshikiri, Ichikawa-shi
Chiba, Japan

A Governor Pitches for Mill

—Jefferson City, Mo.

Editor: As Governor of Missouri, I would like to call your attention to the remarks of Mr. Rolland Bradford, regional manager, Ebasco Services, Inc., Chicago, concerning the potential which exists in Missouri for the pulp and paper industry. Appearing before a Forestry Conference in Columbia, Mo., Mr. Bradford states that Missouri has a definite potential in this field, and I quote:

"Since most of your wood is short fiber, or mixed hardwoods, and some of not too good quality, one possible product is composition or building board. . . . Board mills can be economically built and operated in small sizes requiring not too much wood at one point, with a minimum of stream pollution. You might consider small pulp mills of the neutral semi-chemical type, producing market pulp to be blended with long fiber in paper mills in St. Louis or other centers. You might produce milk carton stock, corrugating board or molded paper products in an integrated mill, using semi-chem pulp."

JAMES T. BLAIR, JR.
Governor, State of Missouri

"Factually Correct"

—Battle Creek, Mich.

Editor: You made a fine presentation of the article on our newly rebuilt board machine in October, which had the additional merit of being factually correct.

LAWRENCE G. FELL
Chairman of the Board
Michigan Carton Co.

Bouquets for World Review

". . . your 1958 World Review is very well put together with information of untold value . . ."—LAWSON TURCOTTE, President, Puget Sound Pulp & Timber Co.

". . . as usual, a fine job . . ."—PAUL C. BALDWIN, vice. pres., Scott Paper Co.

". . . your usual wonderful job . . ."—EDWARD McSWEENEY, vice pres. and treas., Perkins-Goodwin Co.

". . . so much pertinent information . . . every year you make improvements. . ."—A. D MERRILL, pres., Chemipulp Process Inc.

". . . a work of art . . . international news particularly impressive . . ."—RAY SMYTHE, Portland, Ore.

". . . a bang-up job. . ."—V. R. COUDERT JR., Northeastern Paper Sales Inc.

". . . most commendable . . ."—A. E. OLIPHANT, vice pres., Castle & Overton Inc.

". . . a most worthwhile issue . . ."—R. J. CASEY, J. M. Huber Corp.

". . . it is excellent . . . happy with your front cover. The globe ties in with the globe we use as the O in Cameron . . ."—P. M. WITHSTANDLEY, Cameron Machine Co.

". . . very well done . . ."—RAY HARTER, R. T. Vanderbilt Co.

... you get the same, fine service for all grades of pulp

Through the Gottesman Organization, outstanding pulp producers everywhere supply you with Bleached and Unbleached Sulphite, Bleached Hardwood, Groundwood, Bleached, Semi-Bleached and Unbleached Kraft in the quality and quantities you must have for efficient production. And no matter what the grade of pulp, our service reflects over 70 years of experience in satisfying our many customers.

The Gottesman Organization

WOOD PULP G PULP PAPER EXPORT CNC

Established 1886

GOTTESMAN & COMPANY, INC. • CENTRAL NATIONAL CORPORATION
CENTRAL NATIONAL COMMERCIAL COMPANY, INC.
100 PARK AVENUE, NEW YORK 17, N.Y.

Gottesman & Company Aktiebolag, Stockholm, Sweden • Central National-Gottesman Limited, London, England
Representatives in 55 Leading World Markets

General Outlook

THE PAPER INDUSTRY WILL BE MORE STABLE and prosperous in the future, says David L. Luke, president, West Virginia Pulp and Paper Co. "The low point of the recession is over and the destructive overcapacity which once plagued the business is unlikely to recur," he added, "because of basic changes in world supply of pulp."

PRINTING PAPERS DEMAND HAS STRENGTHENED slightly says P. H. Glatfelter III, president, P. H. Glatfelter Co. But he doesn't foresee any return to a sellers' market in the near future. Recent increase in industry capacity will more than offset any forecasted increase in demand, he explains.

PAPERBOARD OUTPUT MARKS RECORD WEEK . . . U.S. mills produced more paperboard in one October week than in any other week on record. The new output record, the third in as many months, was 317,807 tons —95% of capacity.

"OUTSTANDING" 1958 SALES YEAR and continued upward trend in 1959 is outlook, says Thomas B. McCabe, president of Scott Paper Co. Scott's total sales for the third quarter this year were about 6% above those of corresponding period of 1957, he said.

PAPER CONSUMERS' INVENTORIES AT LOW POINT . . . "Crown Zellerbach's experience, which seems similar to many other paper companies, is that dealers and users have reduced their inventories to a "hand-to-mouth level," says A. B. Layton, CZ president. He cites an increase in orders for immediate delivery and consumption but no evidence of substantial rebuilding of customers' inventories.

RECOVERY FROM THE RECESSION BOTTOM is a genuine one, says Donald J. Hardenbrook, vice president, Union Bag-Camp Paper Corp. That is, he adds, unless it goes too fast in the next few months. With mill inventories very low, the company's big Savannah, Ga., plant is running at full capacity and expects to maintain that rate for the rest of the year.

1958 SALES OF MEAD CORP. RISE SHARPLY . . . expected to reach $245- to $255-million. Financial vice president H. T. Mead said the company's operations improved in the third quarter over previous periods this year because of "increased demand" and "greater volumes in all types of paper."

FUTURE BRIGHT FOR PAPER AND PULP IN WEST . . . Robert W. Smith, assistant director, Stanford Research Institute, told more than 100 guests of the Golden Gate District, TAPPI, that consumption and production of paper and board is expected to increase in the West by 87% by 1965, at which time some 5.5-million tons of paper and board would be produced there.

MULTI-MILLION DOLLAR IMPROVEMENT PROGRAM will be launched early in 1959 by Standard Packaging Corp., Eastern fine paper and pulp division. Aims are to beat capacity and maintain quality.

ST. REGIS PAPER CO. LOOKING TO NET OF $30 TO $35-MILLION . . . This prediction for 1960 or 1961, by William R. Adams, president, is based on continuation of current rising tempo of the economy and development of new uses for paper products.

SALES OF FINNISH PULP DOWN IN U.S., UP ELSEWHERE . . . Finnish pulp sales to the U.S. market dropped 32% for the first nine months of 1958 as compared to 1957, but have shown an increase of 5% to all world markets. U.S. sales registered 45,600 tons as opposed to the 1957 tonnage of 67,500. Total Finnish exports: 832,800 tons against 793,300 for 1957.

RAYON TIRE CORD FIGHTS ADVANCE OF NYLON . . . Five major producers of rayon have created American Tyrex Corp., a promotion firm, to ward off further attempts by nylon to penetrate the tire cord field. The producers, American Enka, American Viscose, Beaunit Mills, Courtlands (Canada), and industrial Rayon,

SCAPA

GROUP "C"

SYNTHO-ASBESTOS Dryer Felts

incorporate our exclusive

* "3-DECKER" STRUCTURE

- Dacron-Nylon Working Face
- Syn-Reinforced Asbestos Center
- Syn-Reinforced Cotton Back

(Approx. 25% Synthetic Content)

They insure excellent drying, combined with unusually high resistance to thermal, chemical and mechanical degradation.

Types 3175-C (SRA) and 3480-C (SRA) supplied in all widths either open-ended or with Clipper Seam.

Type 3980-C (SRA) supplied endless with hand-spliced seam.

*World Patents Granted and Pending

Morey Paper Mill Supply Company
309 SOUTH STREET, FITCHBURG, MASSACHUSETTS

Sole U. S. Agents for

SCAPA DRYERS, INC.
WAYCROSS, GEORGIA

will use the firm to push sales of high tenacity rayon—made of woodpulp—for tire cord.

PACIFIC COAST PAPER PRODUCTION TO INCREASE to 5 1/2-million tons in 1965. This is basis for Monsanto's installing of a Mersize plant in Seattle. Others are in Georgia and Quebec. Lloyd Shand, manager of paper chemicals sales for the company, estimates 20 per cent of U.S. production is processed with fortified rosin size.

U.S. PULP PRODUCTION AND USE 3% OFF 1957 . . . Imports are off about 5% and export of the American product is 19% below 1957 shipments, with a growth of pulp inventories resulting. Puget Pulp News lists stocks at producing mills, for their own use and for sale in the market, about 24 per cent higher than year-ago level, and 66 per cent above 1955 inventories, when the upward trend began.

Mills and Mill Plans

ST. REGIS REOPENS CARTHAGE MILL . . . The St. Regis paper mill in Carthage, N.Y., which has been on a standby basis for some months, has reopened. Production will be changed from ground wood printing papers to shipping sack kraft, variety bag kraft, gumming kraft and crepe papers. Production is expected to be 70 tons a day.

ANOTHER STRAW-USING MILL TURNS TO WOOD . . . Alton Box Board Co., Alton, Ill., one of the major producers of strawboard and also boards made with purchased fibers, is turning to the Midwest hardwoods. Other mills have done likewise with the increasing scarcity and expense of straw. Chipping facilities at Tamms, Ill., are expected to begin in 1959, at the initial rate of 10 carloads a day. Chips will be converted to pulp at Alton.

LONG-AWAITED DECISION ON TENNESSEE MILL. . . . G. W. E. Nicholson, president of Tennessee River Pulp & Paper Co., made the announcement that Counce, Tenn., just above the Mississippi line, on the west bank of the Tennessee River, is selected as site for new 500-ton kraft pulp and containerboard mill. Options on site exercised. (Story in this issue.)

LAUNCH NEW EXPANSION PROGRAM . . . Powell River Co. will spend $8,000,000 on the first fine paper mill in western Canada and a new, unusual flakeboard plant. Work on the fine paper mill is expected to begin before the end of '58. (Story in this issue.)

NEWSPAPER RUMORS SCOTCHED BY POTLATCH . . . PULP & PAPER checked published reports that Potlatch Forests Inc. decided to build new mill in Arkansas and found them false. Potlatch has acquired option in eastern Arkansas to explore suitability for a mill. Options will not be exercised until suitability is established.

WE DON'T STAND STILL . . . EXPANSION CONTINUES. . . . pile driving for a $30,000,000 pulp mill of Celgar Ltd., on the Columbia River in British Columbia's Kootenay district, will start at once. Specifications for the dryer, recovery furnace and other major equipment will be completed before Jan. 1. . . . A $6,000,000 improvement is going in at Halifax Paper Co., Roanoke Rapids, N.C. —Rust Engineering of Pittsburgh is designing and building plant for new Beloit 246 in. wire machine (225 tpd) to start up next spring. . . . KVP Co., Kalamazoo, is building a converting plant and warehouse in Griffin, Ga., more warehousing at Devon, Pa., and adding equipment at Espanola, Canada. . . .

OWENS-ILLINOIS PLANS TO MODERNIZE . . . A new 170-in., high speed paper machine is included in the major modernization program at the Owens-Illinois Glass Co. Mill Division plant at Big Island, Va. The machine will replace the company's two 102-in. machines, the combined capacity of which is 200 tons a day. Initial capacity of the new machine will be 265 tons and a potential of 380 tons a day.

Failing to get the right unwind equipment can be

A COSTLY MISTAKE

Almost any unwind equipment looks good when it is new, but continuous, dependable performance depends on the brake. Continuous braking required on unwind equipment is one of the toughest jobs in roll processing. When your brake, the heart of unwind equipment, hasn't got what it takes it soon loses control of tension on the unwinding web. Parent roll waste increases and quality goes downhill—fast! By the time you locate the fault you're in real trouble!

Continuous unwind braking is like driving a car on long trips day after day, with the brakes on all the time, all the way. Friction and heat transfer present a tremendous challenge to engineering skill. Unwind brakes don't just hold—they must provide highly sensitive continuous web control through a wide torque range, plus extremely smooth, fast stops. The slightest failure in response can snap the web or set up damaging vibrations.

Play it safe! When you choose your unwind equipment insist that it meet these two important requirements: First, it must be designed specifically to meet the unique demands of continuous service; Second, the unwind brake must be custom-fitted to meet your individual needs as they relate to differences in speed, machine width, roll diameter, tension and characteristics of material.

Choice of shaft-type or shaftless design, skew adjustment, edge-guiding, mill roll oscillation and automatic centering are other things to consider when you select unwind equipment.

To give you assurance of dependable service Cameron specialists have developed a full line of unwind equipment including the only complete line of brakes ever built specifically for continuous unwind control (21 models). Is your problem with small diameter rolls of light plastic films such as saran, mylar and cellophane? Or, do you handle 72" diameter rolls of heavy grades of paper or paperboard? No matter what material you work with you can get the *right* equipment custom-fitted with the *right* Cameron brake to meet your exact unwind requirements.

Don't let time and money losses pile up. If you are not getting the *sure* web control you need to stay well ahead of competitive standards then it's high time to contact the Cameron specialists. Do it now . . . write for information on Cameron unwind equipment and web controls.

Ask about the new Cameron Lease Plan

Cameron Machine Company, Franklin Road, Dover, N. J.
Canada: Cameron Machine Co. of Canada, Ltd., 15 Hatt St., Dundas, Ontario
France: Batignolles-Chatillon, 5 Rue De Monttessuy, Paris (7e) France

---

52 years devoted exclusively to the design and manufacture of slitting, roll winding and unwinding equipment... the CAMERON team of specialists

AA-360

PULP & PAPER Monthly Report

... of significant news and views

EXPANSION TO DOUBLE CAPACITY . . . Pacific Pulp Molding Co. is in the throes of an expansion project to double production capacity of its Wenatchee, Wash., plant according to John C. Higgins, president. Producing molded trays for packaging quality fruit, this plant uses raw materials consisting of waste paper (80%) woodpulp and chemical additives.

HOWARD SMITH PAPER MILLS HAVE ORDERED a paper machine from Dominion Engineering Co. to be installed as part of its plant expansion program at Cornwall, Ont. The machine will have a wire width of 184 in. with a daily capacity of about 150 tons.

TWO NEW CORRUGATED PLANTS . . . The Container Division of International Paper Co. has obtained facilities near Philadelphia for the manufacture of corrugated shipping containers. They will begin production in Jan. 1959. Western Corrugated, Inc., plans completion of its new corrugated plant at Compton, Calif., early next year.

CONTINENTAL CAN FINISHES ONE PLANT, BEGINS EXPANSION OF ANOTHER . . . Operations are now under way at the Paper Container Division plant of Continental Can Co. in Three Rivers, Mich., to supply the company's Bondware resale line on a national basis. At the company's Boxboard and Folding Carton Division plant in Los Angeles, construction has begun on a building extension to house stock preparation equipment to make possible an increase in the plant's board output.

CONSTRUCTION IS CONTINUING ON SCHEDULE at the Hicksville, N.Y., plant of Plastic Coated Paper Corp., which has changed its corporate name to Plastic Papers, Inc. The building is complete and equipment installation has begun. Target date for production is after the first of the year.

CONSTRUCTION OF $200,000 RESEARCH AND DEVELOPMENT BUILDING has been opproved by the board of Consolidated Water Power and Paper Co. at Wisconsin Rapids, Wis.

Other News

GENERAL WAGE INCREASES amounting to 2 1/2% for men, 5 cents an hour for women, retroactive to last June 1, have been agreed on by union and management delegates of 44 West Coast mills. Retroactive adjustments in the uniform wage agreement covering these mills were agreed on to: increase night shift differential from seven to nine cents an hour; and increase all maintenance rates five cents an hour. These agreements will boost hourly rates to $2.06 for men, $1.75 for women.

CROWN ZELLERBACH PAPER SCHOOL OPENS 26TH YEAR at Camas, Wash., with an enrollment of 230 employe students. Thirty-seven are in the 4th year class, 72 in 3rd year, 59 2nd-year, and 62 are beginners. Of these men and women, almost half (114) are from the Camas div. Others are from West Linn, St. Helens, and Portland, Ore.

SAFETY BETTERED ON WEST COAST. . . . Frequency injury rate for the 44 mills for first 9 months of 1958 is 5.10 vs. 5.53 for last year's like period. The 22 Washington mills lead with a 4.58 rating, the 14 California mills next with 5.78, the 8 Oregon mills last with a 5.84 rate.

FOREST INDUSTRY GETS FORD GRANT FOR STUDY . . . A grant of $13,450 has been awarded by the Ford Foundation for an economic study of forest products industries. Dr. John Guthrie, Washington State College economist, and recipient of the award, said the study will concern the South, Northeast and Lake states. Similar studies in the Western United States, British Columbia and Alaska will be completed this year.

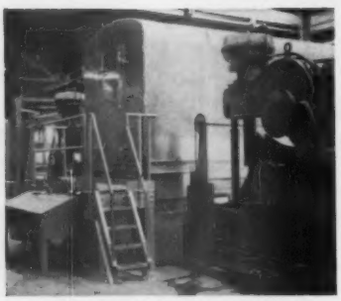
A MILLION MAN-HOURS WITHOUT A LOST-TIME ACCIDENT has been the successful goal of the Canada Paper Co., Windsor Mills, Que. The 1,500 employes of the company began their no-accident period in June. Their achievement was awarded with a certificate of membership in the Safety Millionaires Club, of the Quebec Industrial Accident Prevention Assn.

SF announces

FLAKT DRYER

Number 208

Hudson Pulp & Paper Corporation chose an SF Flakt Dryer for the manufacture of air dried pulp at its newly expanded mill in Palatka, Florida. It now is in operation.



SF PULP PRE-HEATER *located before the last press. Part of the new Palatka installation, it utilizes heat in the exhaust air from the Flakt Dryer for heating the pulp sheet, thereby eliminating the need for live steam.*

SF FLAKT DRYER, *Type H, with 9 decks, designed for drying 150 short tons of bleached sulphate pulp per day from 50% BD to 90% BD. Main dimensions: length 108', width 14', height 13' 6".*

AMERICAN SF PRODUCTS, INC.

420 Lexington Avenue, New York 17, N. Y.

In Canada: SF Products Canada, Ltd., 940 Cote de Liesse Road, Montreal 16, P.Q.

WORLD PULP & PAPER General News

Danish Mill Installs Machine

Copenhagen . . . The United Paper Mills Ltd. (De Forenede Papirfabrikker) has installed a new board machine with daily capacity of 100 tons. This firm owns six mills in Denmark and supplies about 90% of Denmark's total paper and paperboard production.

Elephant Grass Pulp

Beira, Mozambique . . . Builders of a pulp and paper mill at Lamego, about 53 miles from Beira, have acquired over $4,000,000 worth of machinery for the mill. Production of pulp from waste paper is expected to begin by early 1960 and production of pulp from elephant grass is planned about six months later.

Pakistan Mill on Schedule

Khulna, East Pakistan . . . The Pakistan Industrial Development Corp. has begun installing machinery at the newsprint mill it is building in Khulna. The mill building itself has been completed. Wartsila-koncernen A/B of Finland is supplying the two paper machines. Other equipment is coming from Germany, the United States, England, Canada, Sweden, Italy and Holland. Startup is expected to meet the scheduled date of May, 1959. The plant will produce 23,000 tons of newsprint and 12,000 tons of mechanical printing paper annually, using pulp made from local Gewa wood mixed with imported chemical pulp. The P.I.D.C. expects to begin producing long-fiber pulp from bamboo at Karnaphuli Paper mills, shortly after the Khulna mill starts up, thus eliminating the need for importing pulp.

Investigate Tasmanian Forests

Hobart, Tasmania . . . Australian Paper Manufacturers Ltd. is investigating the Huon Valley of Southern Tasmania as a site for a pulp mill. L. R. Benjamin, who holds an option from the Tasmanian Government on pulpwood resources in the area, is participating in the investigation. A.P.M.'s new paper machine, to be installed at its Botany Mill in 1961, will require an ample supply of eucalypt pulps. The firm is also investigating other sites in Australia.

Swedish Group Expansion

Stockholm . . . Statens Skogsindustrier, the state-owned Swedish forest industry group, plans a new pulp and paper mill at Pitea and expansion of the Karlsborgsverken's kraft mill to increase output by 60,000 tons. The Pitea mill would produce 79,000 tons of kraft pulp and 31,000 tons of semi-cellulose from birchwood. Pulp from both the new mill and the expanded Karlsborgsverken's mill would be processed into paper.

Korean Mill Operating

Seoul . . . Sampoog Paper Co., a newsprint mill, has been rehabilitated by the UN Korean Reconstruction Agency and can now meet about one-third of the country's annual newsprint requirements.

China Plants Rich Forests

Peiping . . . During China's first five year plan (1953-57), trees were planted on an area greater than all the forests of Britain, Belgium, the Netherlands, Greece and Italy combined, or a total of 28 million acres. This is more than 30 times as much as was planted in China between 1911 and 1946. China plans to double her forest area within 10 years, and to increase timber reserves by a third in 15 years—from 6,000 million cubic meters now to 8,000 million in 1973. Over 600,000 acres have been replanted during recent years. In 1957 about 20 million cubic meters of timber were produced and the target for 1962 is 31 to 34 million cubic meters.

Start Up Italian Mill

Trieste . . . Cartiera del Timavo's $8,400,000 pulp and newsprint mill, Italy's largest single paper mill, has begun production. The mill has a Finnish paper machine designed for a speed of 1,900 fpm. Annual capacity is 50,000 tons, about 25% of Italy's total newsprint requirements. The mill is using mostly imported timber from Sweden, Finland and Austria.

Learn Logging Techniques

New Delhi, India . . . The government of India, with FAO technical assistance program and help from the government of Switzerland, has organized a national Logging Training Center in the lower Himalayas. Trainees are taught felling, skidding, use of modern tools, operation of cranes, sawmills and other mechanized equipment, in an eight weeks' course. Opened last March, the center was staffed for the first five months by four Swiss instructors under H. G. Winkelmann, director of the Central Forest Organization of Switzerland and chairman of the FAO/ECE committee on forest working techniques and training of forest workers. The officer-in-charge of the logging branch at the Indian Forest Institute and Colleges, Dehra Dun, has now taken over.

Will Build Bleaching Plant

Kajaani, Finland . . . Kajaani Oy is building a new bleach plant just north of its existing pulp mill. It will also modernize its pyrite burning plant and build a water purification plant for the bleaching unit. Planned annual output of the bleach plant is about 90,000 tons of high-quality bleached sulfite pulp. It will be supplied by the Finnish firm Rauma-Repola Oy, and is scheduled for startup in the summer of 1959.

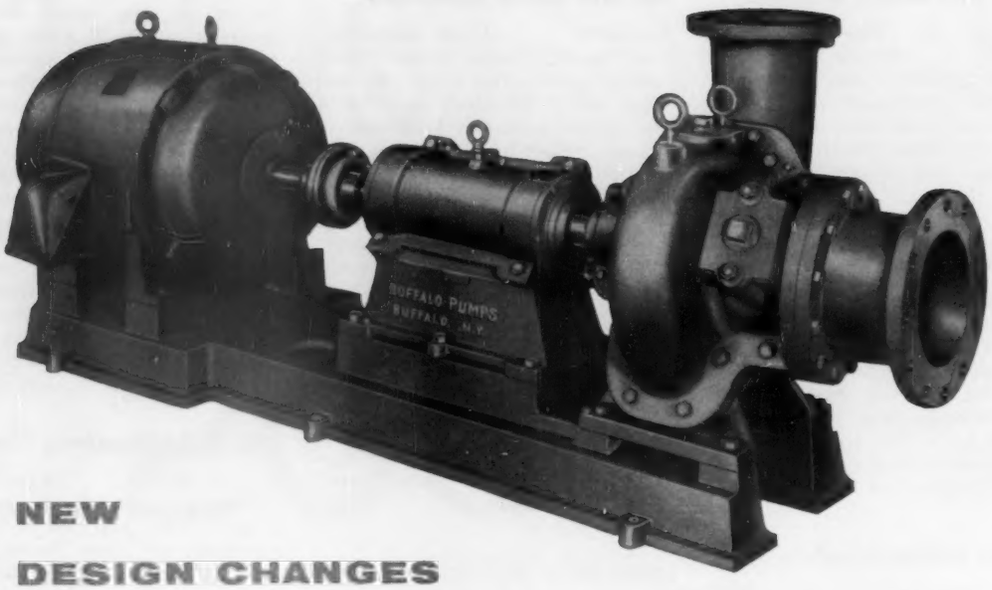
Bagasse Newsprint for Cuba

Havana . . . Cristobal Diaz, president of Tecnica Cubana, expects his mill to be able to serve all newspaper publishers in Cuba with a permanent stock of 3,000 tons of newsprint made from 100% bagasse. Eliminating the need for importing newsprint would save the island about $6 million a year in foreign exchange. Tecnica Cubana's mill, near Cardenas in Matanzas province, uses a process invented by Joaquin de la Roza.

Begin Construction in Angola

Luanda, Portuguese West Africa . . . Work has begun on a $595,000 pulp and paper mill in Alto Catumbela, near the port of Lobito, by the firm of Cia. de Celulose de Angela. Startup is scheduled for late 1959 or early 1960. Daily production will be 60 tons of pulp, 50 tons from eucalyptus and 10 tons from other local fibers. The company will also build living quarters for European and native employes. A hydroelectric station being built on the Catumbela River will supply power for the mill.

"BUFFALO" STOCK PUMP



NEW DESIGN CHANGES ASSURE MINIMUM MAINTENANCE COSTS

Long noted for its ability to efficiently handle high consistency stock, the "Buffalo" Stock Pump has been made even more desirable by these design improvements. As you will note, maintenance is greatly simplified, parts stock requirements kept to a minimum.

SUCTION SPOOL PIECE—Materially reduces repair time and cost. Mounted on the pump's suction flange, this optional feature facilitates easy, efficient servicing.

MAXIMUM PARTS INTERCHANGEABILITY — Results in lower parts inventory costs and stocks. Greatly simplifies inventory control.

DIAGONALLY SPLIT CASING AND BEARING STANDS — For quick, easy removal of rotor assembly to speed inspection and maintenance.

TAPER-BORED IMPELLERS —provide peak efficiency for maintenance, plus greater shaft strength.

OVERSIZED ALLOY STEEL SHAFT — Larger shaft size increases rigidity. Elimination of the shoulder adds greatly to strength behind the impeller.

HEAVY WATER COOLED THRUST BEARING — This newly-developed bearing arrangement withstands severe thrust loads.

For most efficient movement of your stock at minimum maintenance cost, ask your nearby "Buffalo" engineering representative about the new "Buffalo" Stock Pump. Or for full information, write for Bulletin 4080.

"Buffalo" Pumps feature the "Q" Factor — the built-in QUALITY which provides trouble-free satisfaction and long life.

"Buffalo" PUMPS

BUFFALO PUMPS
Division of Buffalo Forge Co.
220 Mortimer St. • Buffalo, N. Y.
Canada Pumps, Ltd., Kitchener, Ont.
Sales Representatives in all Principal Cities

A BETTER CENTRIFUGAL PUMP FOR EVERY LIQUID

WORLD PULP & PAPER Technical News

New Mitscherlich Process

RIETH, KARL. Wochbl. Papierfabrik. 86, no. 11/12: 532-3 (June 30, 1958). [In German] Abstr. Bull. Inst. Paper Chem. 29: 101.

A high-yield sulfite pulping process, now widely used in Sweden but still surrounded by trade secrecy, utilizes concentrated cooking acid (8% sulfur dioxide and 1% calcium oxide) at 122° C. under 4-8 atm. pressure. A cooking time of 9-10 hr. is said to produce pulp yields of 55%, i.e., about 14% higher than with conventional bisulfite cooking. The pulp has Sieber numbers of 40-50, contains more glucan and mannan than do conventional sulfite pulps cooked at 135-140°, and thus possesses better sheet-forming and strength properties. The loss of carbohydrates from the spent liquor, however, seems to indicate a lower return in sulfite-alcohol production. 1 table. C.L.B.

Regenerating Waste Paper

VEREINIGUNG KRAFTPAPIERE E.V., *Wiesbaden, Germany*. Wochbl. Papierfabrik, 85, no. 21: 815-17 (Nov. 15, 1957). [In German] Abstr. Bull. Inst. Paper Chem. 29: 103.

Owing to the increasing use of urea-formaldehyde, melamine-formaldehyde. carbimide, and other synthetic resins not only for wet strengthening but also for improving the dry strength and other properties of kraft papers, it is no longer feasible to separate all resin-containing papers from waste paper. Research work has been conducted, therefore, on the regeneration of kraft papers which may or may not contain synthetic resins. The problem has been solved technologically, although there is room for economic improvements, by using as much mechanical defibration as possible and avoiding or minimizing the lowerng of pH. With these principles in mind, resin-containing waste paper can be reprocessed even with the sole use of kollergangs and hollanders. One mill dissolves its kraft wastes (containing wet-strength agents and light crepe) in a hydrapulper at 40-50°C. and a pH of 6.5, followed by cooking at 90° and pH 4 for a total treatment time of 1 hr. A charge of 8-9 tons in a pulper of 30-35 cu. m. volume requires 3 tons/hr. of steam. Purchased kraft wastes are dissolved continuously in a Voith pulper at 35-40°, then refined, sorted on a vibrating screen, and processed on a board machine. The screen rejects are returned to the pulper. In another mill, kraft-bag waste is soaked with process water of 28-30° for 18 hr. in a spherical boiler and wet-milled in a kollergang. Light crepe requires only one-third as much soaking and milling. Sorted wet-strength kraft is fiberized at 30° in a 12-cu. m. Voith pulper of 12-14 tons daily capacity. The residue (2.5 cu. m.) accumulating after 6 days of continuous operation is heated with steam to 90°, treated with alum, and dissolved within 1 hr. C.L.B.

Presented with permission of The Institute of Paper Chemistry, under supervision of Curtis L. Brown, editor of IPC Bulletin. Photostats or translations of original reports available at reasonable cost by writing Eugene Bunker, librarian, Institute of Paper Chemistry, PO Box 498, Appleton, Wis.

Czech High Yield Sulfite

MILCHOVA, G. Papíripar 2, no. 2°: 46-52 (1958). [In Hungarian; German and Russian summaries] Abstr. Bull. Inst. Paper Chem. 29:101.

In a modified high-yield (63%) calcium-base sulfite process, 20% poplarwood chips and 80% sprucewood chips are charged into the digester and impregnated completely by soaking for 140 min. with a cooking liquor containing 4% sulfur dioxide and 0.9-1.0% calcium oxide at a maximum cooking temperature of 136° C. The pulp produced is suitable for the manufacture of bag papers, high-quality wrapping papers, and imitation parchment and meets Czechoslovakian standard specifications, except for double fold. The introduction of this modified process in a Czech pulp mill is claimed to have resulted in 17% wood savings, a 25% shorter cooking cycle, 12% savings in production costs, and an increase in mill production from 14.5 to 21 tons. 6 tables, 9 figures, and 7 references. C.L.B.

Limp Paper Troubles

EMENDATOR, —. Wochbl. Papierfabrik. 86, no. 2: 43-4 (Jan. 31, 1958). [In German] Abstr. Bull. Inst. Paper Chem. 29: 72-3.

Experiences gained in the production of a soft, fluffy wrapping paper from mechanical and waste-paper pulp mixtures are related. The required paper properties were achieved by selecting cold-ground and free (fast) mechanical pulp and a weakly sized waste-paper stock (or else by removing excess size by a warm presoaking treatment), beating at reduced consistency and with addition of fillers (notably talcum) to the hollander (to compensate for the amount removed along with the waste-paper size), rapid shaking at high dilution on the wire of the paper machine, moderate pressing in the press section, moderate heating of the first drying cylinders, and adding glycerol (or sugar solution or calcium chloride) to the spray water or on the calender. A moderate amount of wax size, in place of rosin size, was found beneficial for the manufacture of heavier flexible papers, such as wallpaper. C.L.B.

Hydraclone for Pulp Screening

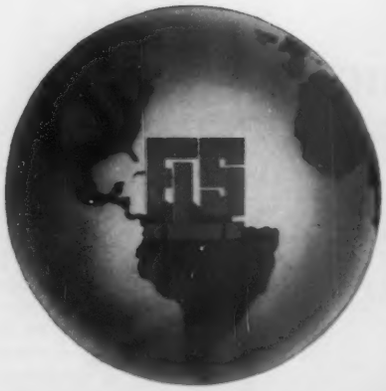
BRECHT, WALTER, and WEISHAUPT, KLAUS. The suitability of a hydracyclone for pulps screening. Wochbl. Papierfabrik. 86, no. 7: 221-8; no. 8: 281-9 (April 15-30, 1958). [In German] Abstr. Bull. Inst. Paper Chem. 29:96.

The theory of a new type of hydracyclone is developed. An experimental study of this apparatus showed it to remove effectively only those slivers having a length:thickness ratio below 6:1 and to be particularly suitable for the screening of long-fibered pulps and screen rejects. Optimum operating conditions were a consistency of 0.18-0.45%, nozzle diameters above 6.5 mm., inlet pressures of 26-32 m., and back pressures of up to 3.5 m. (water column). Under these conditions, the through-put of the hydracyclone was 85-95 liters/min., 2-6% of the fiber suspension being rejected. C.L.B.

Fluffing Tendency of Paper

BRECHT, WALTER. Norsk Skogind. 12, no. 6: 220-8 (June, 1958). [In German; Norwegian summary] Abstr. Bull. Inst. Paper Chem. 29: 75.

An apparatus for measuring the dusting or fluffing tendency of paper and board is described. Paper samples mounted on rotating bolts are rubbed against rotating perlon brushes, and the amount of dust or fluff given off after a specified number of revolutions under standardized conditions is collected and weighed. Using this tester, the dusting of various types of papers was investigated as a function of manufacturing variables, notably pulp composition, beating, loading, glazing, sizing, and R.H. C.L.B.



Smidth

Rotary Kilns

For Reburning Lime Sludge

We are specialists in the design and manufacture of rotary kilns, coolers and auxiliary equipment for burning lime, lime sludge and for many other purposes.

Over 1,250 Smidth rotary kilns have been furnished all over the world.

F. L. SMIDTH & CO.
Engineers and Machinery Manufacturers
11 West 42nd Street · New York, N.Y.

F. L. Smidth & Co., A/S
77 Vigerslev Alle
Copenhagen, Denmark

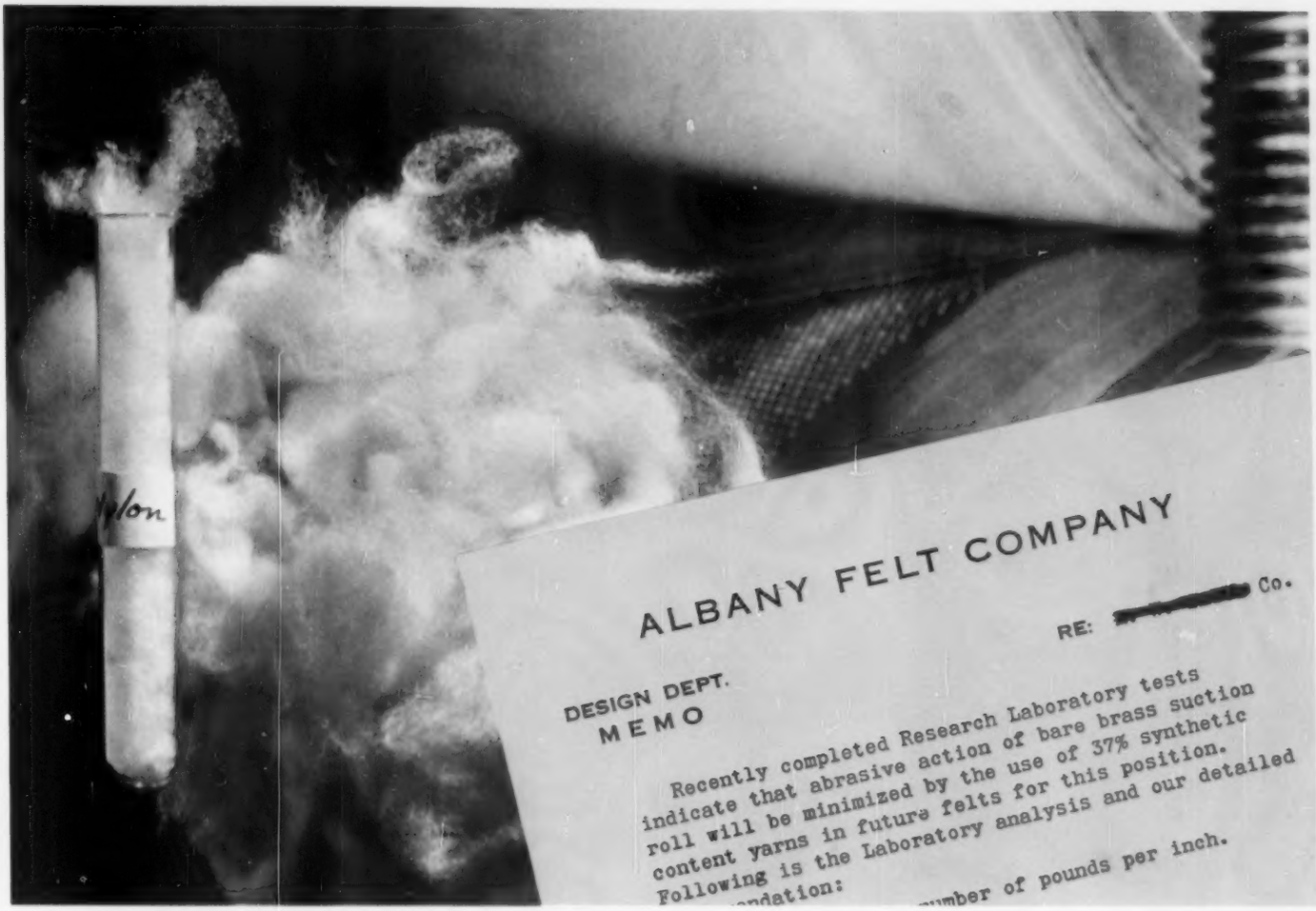
F. L. Smidth & Co., Ltd.
105, Piccadilly,
London, W. 1, England

F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co. (Bombay) Private Ltd.
42 Queen's Road
Bombay, India

WHERE EVERYTHING STARTS WITH RESEARCH


ALBANY FELT COMPANY
RE: [redacted] Co.
DESIGN DEPT.
MEMO
Recently completed Research Laboratory tests
indicate that abrasive action of bare brass suction
roll will be minimized by the use of 37% synthetic
content yarns in future felts for this position.
Following is the Laboratory analysis and our detailed
mber of pounds per inch.

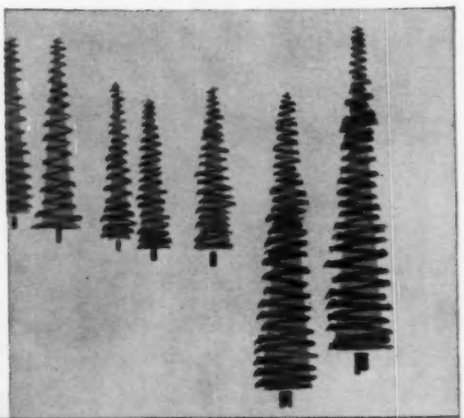
TAKE SYNTHETICS...

A dozen years ago, Albany's laboratories produced—and patented—the first synthetic-content felts ever made. Since then, constant research and on-the-machine experience have provided Albany with the industry's most complete bank of knowledge on the *correct* use of synthetics. This includes an awareness that synthetics are NOT an automatic cure for ALL felt problems. Every individual problem or production goal is thoroughly analyzed before a "prescription" is made. But when synthetics *are* the answer, you can be sure that a synthetic-content felt from Albany will do the job better. It stands to reason! We never lose sight of "The Big Picture" . . . helping *you* produce more saleable tons per day.

ALBANY FELT COMPANY
MAIN OFFICE & PLANT, ALBANY, N.Y.
OTHER PLANTS: HOOSICK FALLS, N.Y.; N. MONMOUTH, ME., ST. STEPHEN, S.C.; COWANSVILLE, P.Q.

NEW IDEAS FOR BETTER PAPERMAKING—FROM THE WORLD'S LARGEST MANUFACTURER OF PAPER MACHINE FELTS

2 OF 7



Five similar digesters previously left Wyatt's Houston Plant for Installation in an Expanding Paper Mill in Louisiana.

The seven digesters were fabricated from 1½-inch and 1¼-inch plate ASTM A. 212 B.F.B. with special chemical analysis on copper, carbon and silicon.

WYATT METAL & BOILER WORKS, INC.

FABRICATING PLANTS:

Houston • Dallas • Corpus Christi • Mexico City

SALES OFFICES:

Houston • Dallas • Corpus Christi • Tulsa • New York
Philadelphia • Pittsburgh • Los Angeles • Mexico City

Subsidiaries

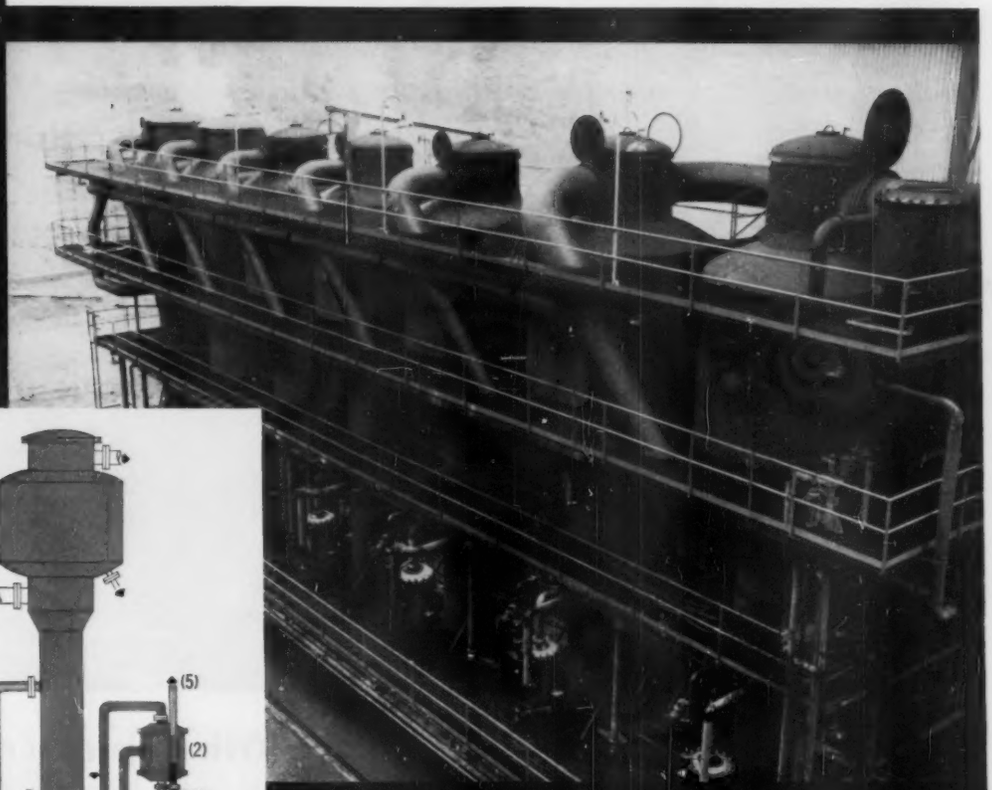
Wyatt's Plastics, Inc.
P. O. Box 3052
Houston 1, Texas

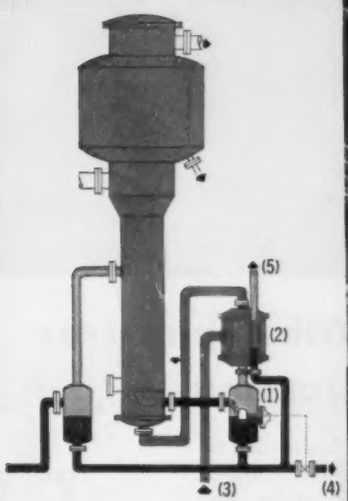
Wyatt de Mexico S.A. de C.V.
Plaza Santos Degollado 10-314
Mexico City

MANUFACTURERS AND ERECTORS SINCE 1913

ROSENBLAD EVAPORATORS

IN 17 COUNTRIES, THE STANDARD FOR EVAPORATOR PERFORMANCE





Condensate and excess vapor-carrying non-condensable gases from effect (above) are separated in condensate remover (1). Vapor and non-condensables flow through the Spiral Heat Exchanger (2) where black liquor (3) to the same effect is pre-heated. The cooled condensate is drained to the combined condensate line (4). The non-condensable gases are sub-cooled and vented through line (5).

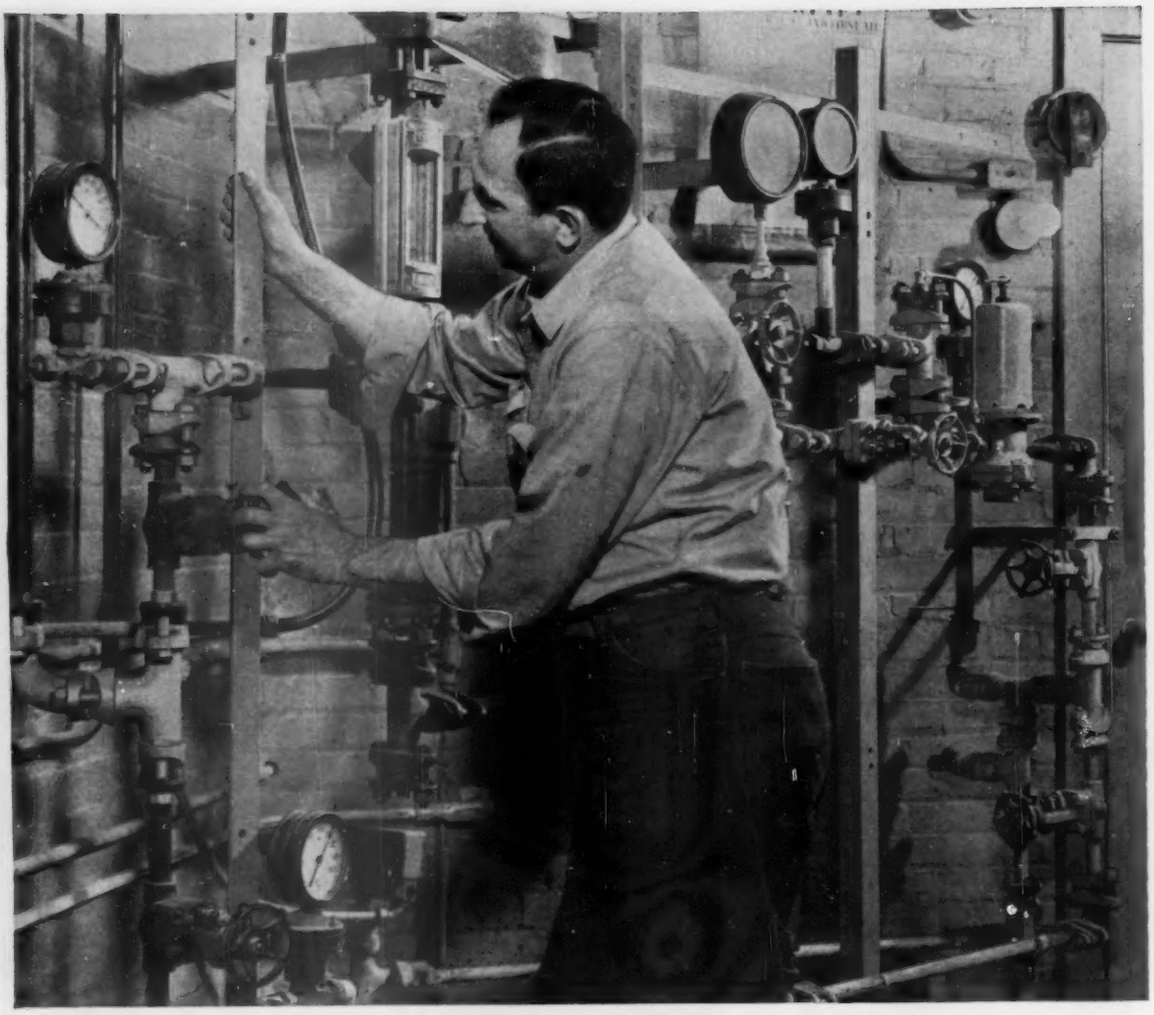
Rosenblad black liquor evaporators, with their effective venting-preheating system, have these important advantages: high heat transfer because of the efficient preheater design... and long, trouble-free life because of the quantity of vapor that is vented.

These advantages are made possible by the Rosenblad Spiral Heat Exchanger, whose exclusive design (two wrapped-up plates) eliminates plugging, maintains high efficiency, and provides optimum heat recovery. Over 50 world-wide installations attest the advantages of Rosenblad evaporators in operating economy and increasing plant capacity. Write for full information.

1270 SIXTH AVENUE, NEW YORK 20, NEW YORK

Rosenblad CORPORATION

6999 COTE DES NEIGES RD., MONTREAL 26, QUEBEC



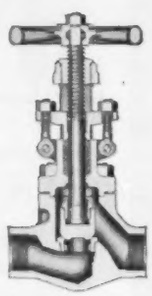
Crane Chlorine Valve Passes 10th Repair-Free Year on Chlorine Gas Throttling

Every time an operator opens or closes the Crane chlorine valve shown above, the Bergstrom Paper Company, Neenah, Wisconsin, is paid another dividend on an investment in service made more than 10 years ago!

This Crane No. 1644 forged steel globe valve is designed especially for chlorine gas or liquid service. In the Bergstrom plant it is used as a throttling valve to control and regulate chlorine gas pressure.

With the exception of a change-over to Teflon packing, this valve has needed no maintenance or repairs in ten years. It operates easily and closes tightly, and permits accurate, close, and safe control of chlorine gas. The record of this and other Crane chlorine valves has led the Bergstrom mill to standardize on the No. 1644 for all chlorine handling.

Ask your Crane Representative about this and other lines of Crane valves for handling hazardous and corrosive chemicals and liquors in your mill.



This rugged forged steel chlorine valve has Hastelloy "C" trim and Teflon packing. Globe or angle patterns; screwed or flanged ends.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

SULPHUR

ONE OF THE FOUR STRONG PILLARS OF PROCESSING

ONLY 2%

...BUT WHAT A 2% !

A recently compiled breakdown of Sulphur consumption in the United States, shows about 2% of the Sulphur goes into the manufacture of insecticides and fungicides.

Not much, perhaps, as tonnages go but no other use of Sulphur is more important with the possible exception of the 'wonder' drugs. It doesn't take much imagination to picture what would happen if the bugs and parasites were allowed to take over our crops and trees. Sulphur, along with other chemicals, is helping to protect our food supplies and foliage.

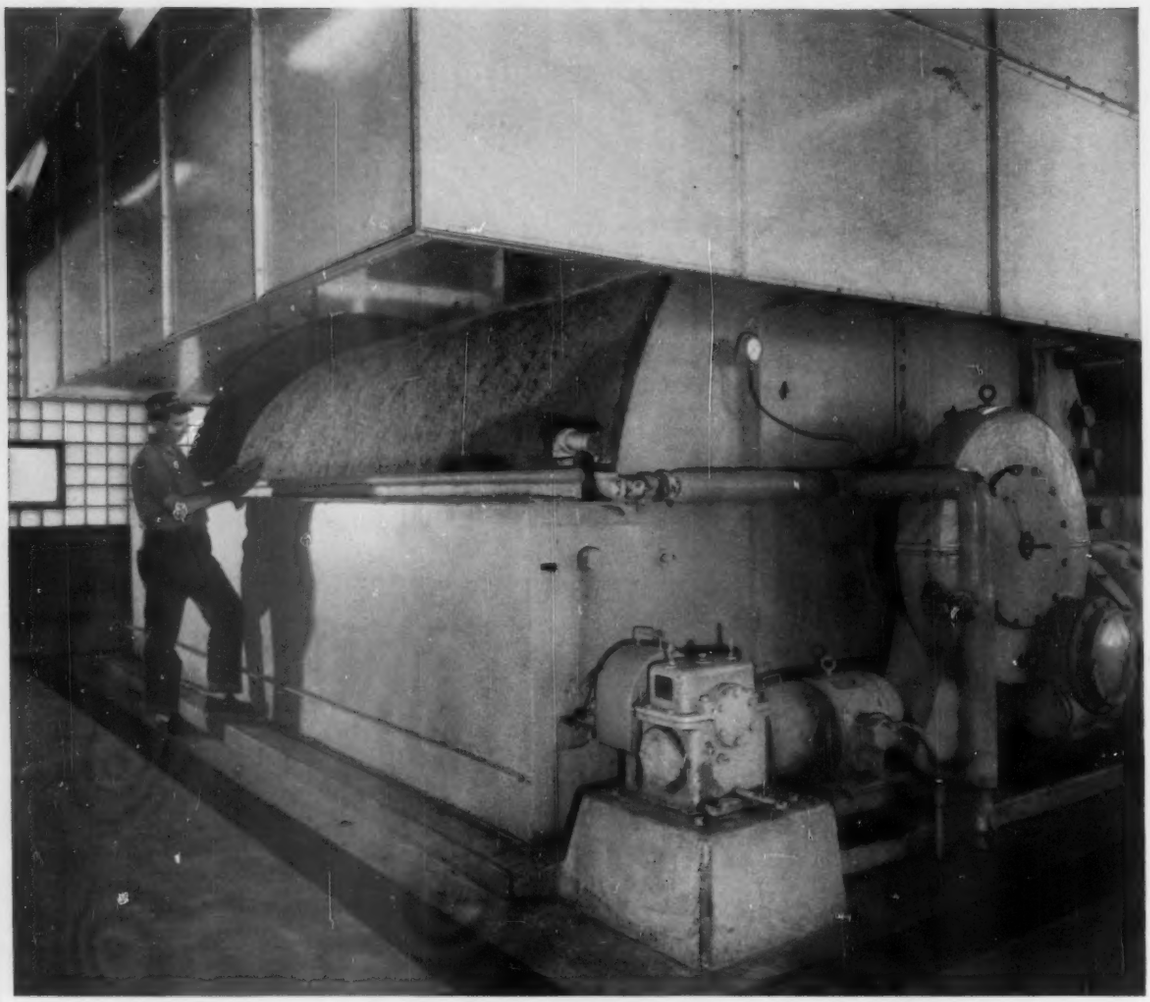
The role that TGS is playing in this constant fight against crop destruction is to see to it that the manufacturers of the insecticides and fungicides *always* have a ready supply of Sulphur, both solid and molten. This constant production and centralized distribution coupled with technical help is our contribution to industry.

SULPHUR PRODUCING UNITS

• Newgulf, Texas • Spindletop, Texas
• Moss Bluff, Texas • Worland, Wyoming
• Fannett, Texas

TEXAS GULF SULPHUR CO.

75 East 45th Street, New York 17, N.Y.
811 Rusk Avenue, Houston 2, Texas



Pulp Washers that give a "Shower of Value!"

Essential to the economical production of quality paper, a well-washed pulp with low dilution is mandatory at Thilmany Pulp and Paper Company.

That's why the Kaukauna, Wisconsin papermaker relied on Swenson to provide the washers that furnish clean pulp at the lowest possible dilution. Now, with its line of Swenson 4-drum, 5-stage brown stock washers, Thilmany reports improved performance . . . *and* marked reductions in operating costs accompanied by an increase in quality of paper.

Long-time favorites, Swenson Pulp Washers are designed and engineered specifically for brown stock washing. Send for your copy of the interesting new color Bulletin 243, "Processing Profiles"—a tour of Swenson Processing Equipment in action at Thilmany and many other installations.

Swenson Evaporator Company, 15632 Lathrop Avenue, Harvey, Illinois.

87 OF AMERICA'S "FIRST HUNDRED" CORPORATIONS ARE WHITING CUSTOMERS

SWENSON

Proved Engineering for the Process Industries Since 1889

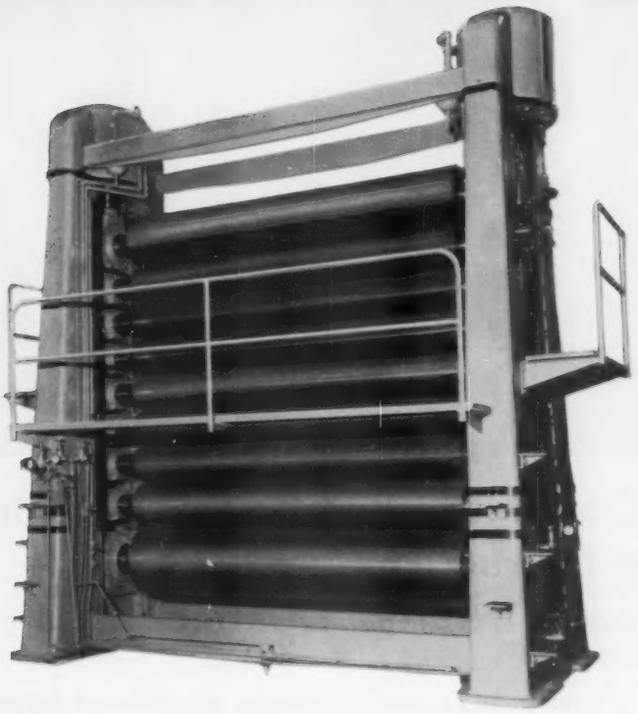
A Division of WHITING Corporation

WHITING—MANUFACTURERS OF CRANES; TRAMBEAM HANDLING SYSTEMS; TRACKMOBILES; FOUNDRY and RAILROAD EQUIPMENT

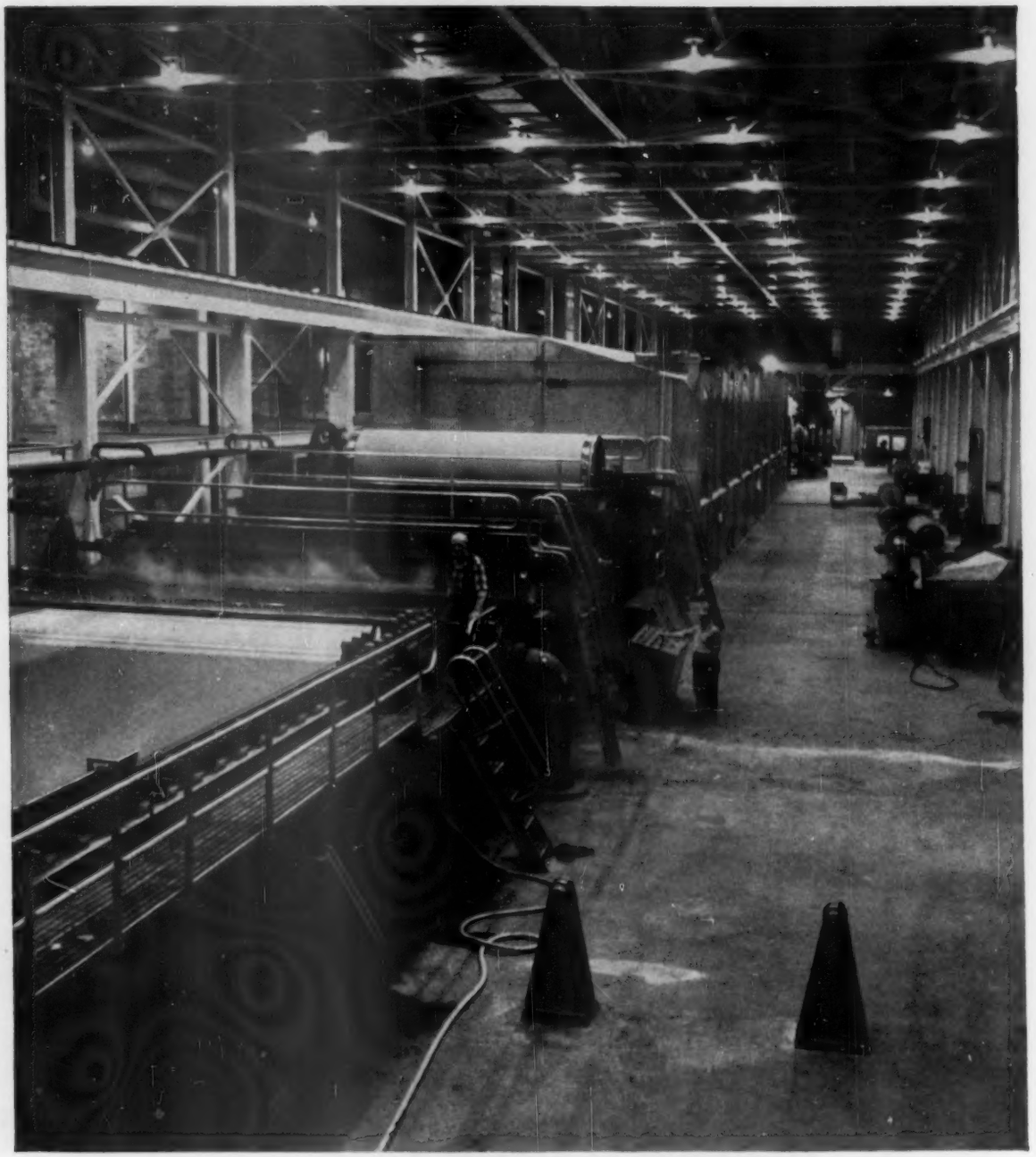
APPLETON

The clean, uncluttered lines are unmistakably Appleton. The advanced design and precision performance are what you'd expect of Appleton's engineers, developers of the industry's most respected supercalenders. This high-speed Appleton machine calender is deliberately built for profitable performance in manufacturing high-finish papers. Its well-earned reputation for efficiency and economy is the result of its operating and construction features: **box type fabricated steel frames . . . anti-friction bearings throughout . . . hydraulic or pneumatic loading and roll separation . . . compact, space-saving design . . . a wide range of sizes.** Your AMC representative will gladly present all of the details. We invite you to call on him . . . or if you prefer, write us for installation photographs and specifications.

MACHINE CALENDER



APPLETON MACHINE COMPANY
APPLETON, WISCONSIN



The Dominion Pulp Drying Machine at the Thurso Pulp and Paper Company, Thurso, Quebec.

DOMINION DESIGNS AND BUILDS ALL TYPES OF PAPER MACHINES

DOMINION ENGINEERING
COMPANY LIMITED, MONTREAL

Routing clays the Huber way is fastest

Approximately 1,000 carloads of clay are expedited each month by Huber's Traffic Department to all points of the compass. Our records and our customers' prove that barring Nature's vagaries, *these shipments get to their destinations in record time* via the least expensive routing.

Customers think so highly of our traffic service they often ask for advice for the best routing of other materials to their plants. We're always happy to help. You will find our Traffic Department's knowledge of shipping routes, rates, schedules and availability of box, tank and hopper cars to be without parallel in the industry.

All hopper cars and boxcars for Huber shipments are carefully inspected and cleaned, and all boxcars are paper lined prior to loading. Square, solid unit and palletized loads are rapidly handled and easily stored. Huber shipments arrive in top condition.

Ask for working samples of any of the clays in the complete Huber line.

HUBER **J. M. HUBER CORPORATION** • 100 PARK AVENUE, NEW YORK 17, N. Y.

Mines & Plants: Huber, Ga.; Graniteville & Langley, S.C.

POWELL

world's largest family of valves

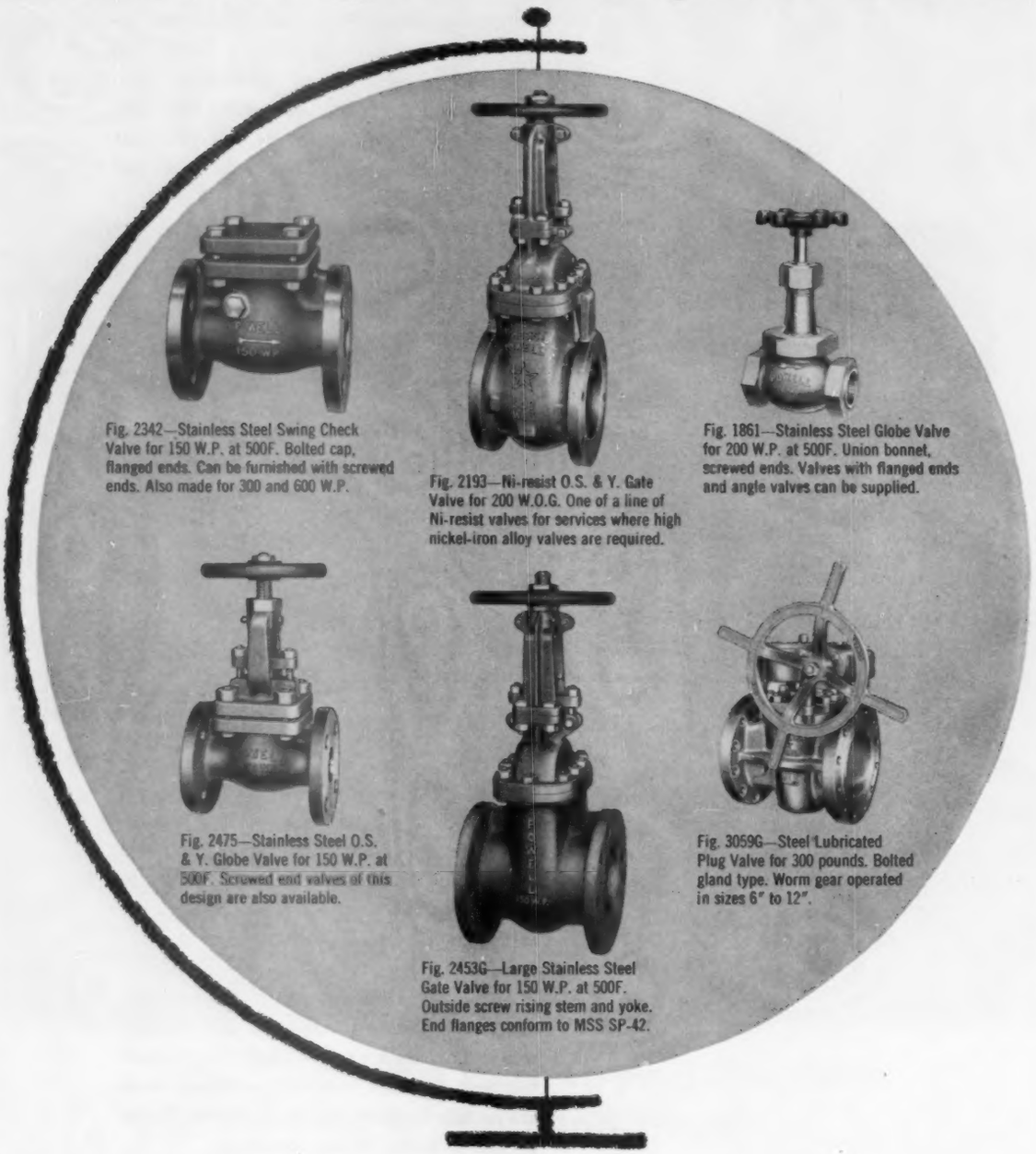


Fig. 2342—Stainless Steel Swing Check Valve for 150 W.P. at 500F. Bolted cap, flanged ends. Can be furnished with screwed ends. Also made for 300 and 600 W.P.

Fig. 2193—Ni-resist O.S. & Y. Gate Valve for 200 W.O.G. One of a line of Ni-resist valves for services where high nickel-iron alloy valves are required.

Fig. 1861—Stainless Steel Globe Valve for 200 W.P. at 500F. Union bonnet, screwed ends. Valves with flanged ends and angle valves can be supplied.

Fig. 2475—Stainless Steel O.S. & Y. Globe Valve for 150 W.P. at 500F. Screwed end valves of this design are also available.

Fig. 2453G—Large Stainless Steel Gate Valve for 150 W.P. at 500F. Outside screw rising stem and yoke. End flanges conform to MSS SP-42.

Fig. 3059G—Steel Lubricated Plug Valve for 300 pounds. Bolted gland type. Worm gear operated in sizes 6" to 12".

FOR EVERY FLOW CONTROL PROBLEM Powell offers more kinds or types of valves, available in the largest variety of metals and alloys, to handle every flow control requirement. Your local valve distributor will be glad to tell you all about them. Or write to us for the full facts.

THE WM. POWELL COMPANY • *Dependable Valves Since 1846* • **Cincinnati 22, Ohio**

In cold soda pulp—

H_2O_2 bleaches brighter and whiter

Hydrogen peroxide is a preferred bleach for chip-groundwood pulps because—in addition to its excellent effectiveness—it gives markedly increased reversion resistance.

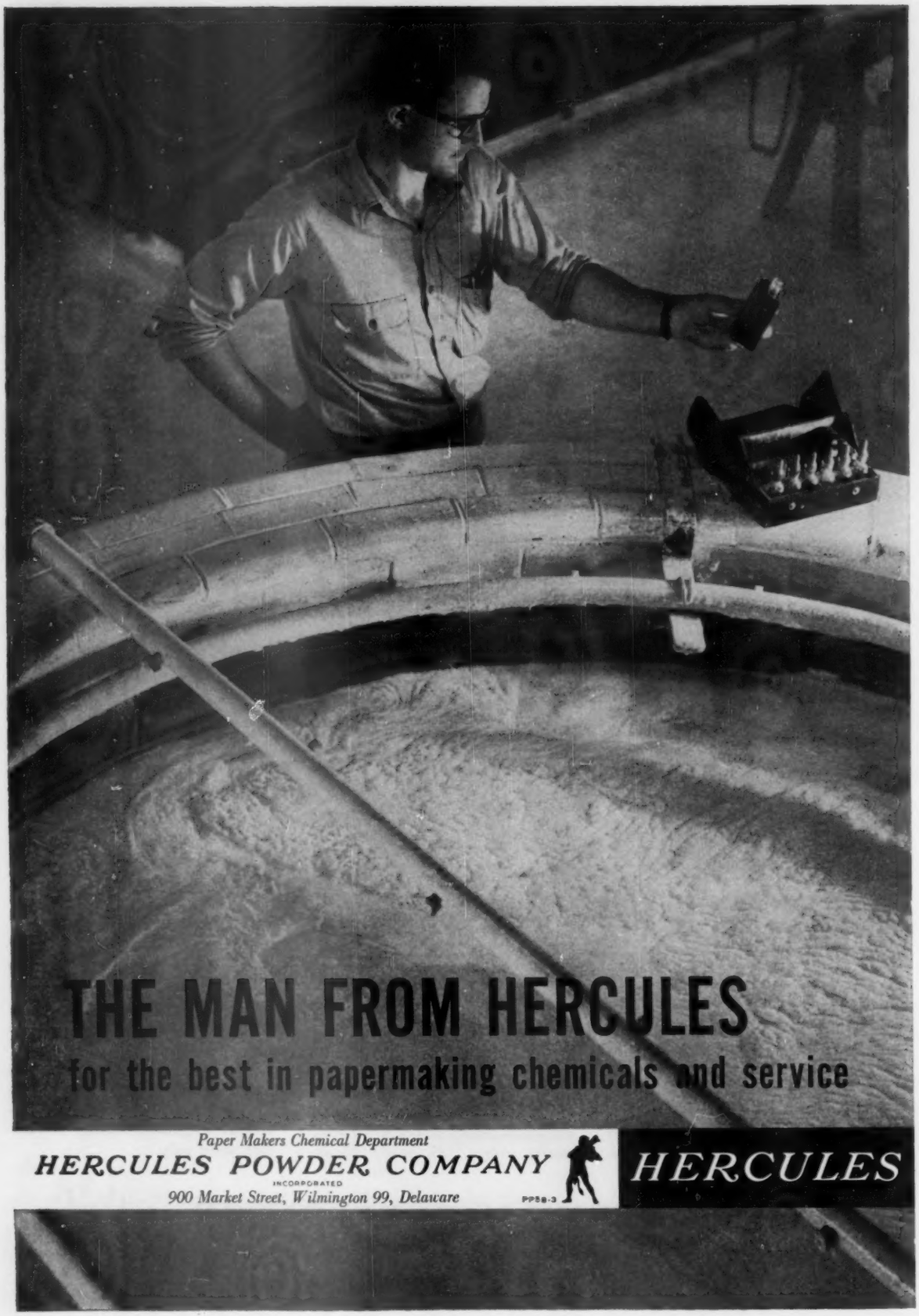
Unlike other bleaches, the higher you bleach with *hydrogen peroxide*, the greater the resistance to reversion. Still another important advantage . . . H_2O_2 bleaching preserves yield.

Shell Chemical has had cold soda pulp bleaching experience with nearly every U.S. hardwood, including Northeastern, Midatlantic, and Southern species.

Your Shell Chemical representative will be happy to supply you with complete information on hydrogen peroxide bleaching of ultra-high-yield pulp.

SHELL CHEMICAL CORPORATION
CHEMICAL SALES DIVISION
Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco • St. Louis

SHELL



Paper Makers Chemical Department
HERCULES POWDER COMPANY
INCORPORATED
900 Market Street, Wilmington 99, Delaware
PPSB-3

HERCULES

TOM BIGBEE SAYS:

They're bleachin' and balin' at Naheola!

Marathon Southern's new mill at Naheola, Ala., has settled down to continuous production—they're bleachin' and balin' around the clock!

Rigid quality control—automatic and foolproof—keeps production going at top speed with unvarying excellence in the finished product. Naheola pulp—in either hardwood or softwood—is the finest the South has to offer.

All-modern bleaching facilities—now in full-time operation—put the clean, bright finishing touch to already excellent quality pulp.

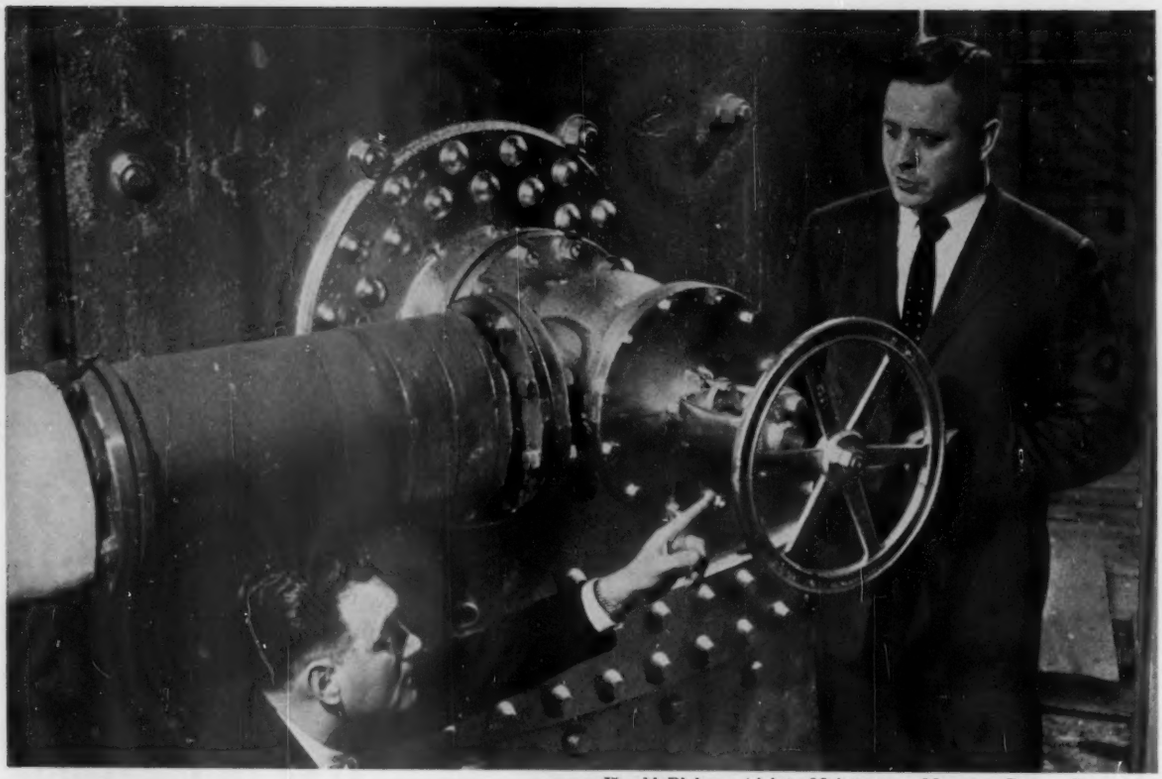
The huge paper machines have been running continuously for several months. Everyone, including customers, is extremely pleased with results. With automatic instrumentation to guarantee product excellence, and good transportation facilities from Naheola to paper mills anywhere, America's paper industry is assured of service as needed, and can buy—confident of dependable quality and quantity on a continuing basis.

Yes, they're bleachin' and balin' at Naheola—just 170 water miles north of Mobile on the Tombigbee.

Ask Tom Bigbee about Naheola pulp samples. He'll send you a quantity for laboratory testing. Just write to Tom in care of the Pulp and Paper Department of Marathon in Menasha, Wisconsin.

MARATHON SOUTHERN CORPORATION
NAHEOLA, ALABAMA (P. O. Butler, Alabama) A subsidiary of

MARATHON
A Division of American Can Company
MENASHA, WISCONSIN



Harold Blakney (right), Maintenance Manager, Brown Company, Berlin, N. H. Left, Frank Hiltz, Vice President Brown Wales Co., Cooper Alloy distributors, Auburn, Me. Center, Cooper Alloy 8" angle circulating valve on digest tank.

BLAKNEY of BROWN COMPANY

tells why Cooper Alloy Valves suit him

Q. *Mr. Blakney, why does Brown Co., a leading manufacturer of pulp, paper, and other forest products, use stainless valves and fittings in its mills?*

A. Because stainless steel is one of the few materials that can take the tough corrosion punishment of pulp mill digester fluids.

Q. *Why Cooper Alloy valves?*

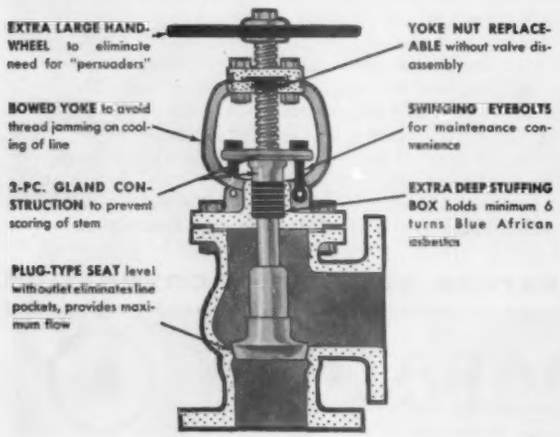
A. For long life and low maintenance. Over the years Cooper Alloy valves have proven themselves to be extremely well designed for the tough service we give them.

Q. *How, specifically?*

A. Well, these 8" angle valves, for example, have that extra-deep stuffing box to give a tighter stem seal. The seat, level with the outlet, eliminates line pockets and provides maximum flow. These plus extra large handwheel all give me less maintenance problems.

Q. *Anything else you like about Cooper Alloy valves?*

A. Yes, I like the engineering service available from Cooper Alloy we have had occasion to use, and the fine fast delivery and service we obtain from Brown Wales' nearby warehouse.


EXTRA LARGE HAND-WHEEL to eliminate need for "persuaders"
BOWED YOKE to avoid thread jamming on cooling of line
2-PC. GLAND CONSTRUCTION to prevent scoring of stem
PLUG-TYPE SEAT level with outlet eliminates line pockets, provides maximum flow
YOKE NUT REPLACEABLE without valve disassembly
SWINGING EYEBOLTS for maintenance convenience
EXTRA DEEP STUFFING BOX holds minimum 6 turns Blue African asbestos

A VALVE DESIGNED FOR STAINLESS! The Cooper Alloy valve is not an adaptation of earlier brass and iron patterns. Cooper Alloy, with over 35 years of experience in handling stainless steel, created a valve *designed to be cast in stainless!* Check the Special Design Features shown at left.

As the little CA man below is saying: "*You can tell a Cooper Alloy Valve as far as you can see it!*" Write today for *your* copy of our folder "Valves and Fittings in the Pulp and Paper Industry." The Cooper Alloy distributor near you will be glad to show you the complete line of Cooper Alloy valves *and fittings*, and their advantages. He can serve you promptly from local stocks.

COOPER ALLOY

Corporation • Hillside, New Jersey

FOUNDRY PRODUCTS DIVISION

THIRTY-FIVE YEARS OF STAINLESS STEEL PIONEERING

PUGET PULP IS WHITE

PUGET SOUND PULP and TIMBER CO.
BELLINGHAM • WASHINGTON

Just what you'd expect from the leader!

Three new modified gum rosin sizes
that already are proving themselves in leading
paper mills across the country!

CYANAMID CYANAMID CYANAMID CYANAMID

Trust the leader in the industry to come up with the first and the finest. Cyanamid's vast, diversified and expanding research program is constantly up-grading and improving all Cyanamid products. And our three, fine, new *modified gum* sizes have been developed out of this research. Look them over yourself. They offer new economies in shipping and storage (Cyanamid's 80% solids fortified size is an exclusive in the industry) . . . minimum foam characteristics for top size efficiency (you can make less go farther, or use the same amount for a more highly sized end product) . . . and better color, for highest paper brilliance.

***NEW!* ACCOBRITE® ROSIN SIZE 4028**
—Unfortified modified gum rosin size . . . shipped as 80% solids. Has excellent color, low foam. Ideal for use in board . . . and much lower in cost than fortified size. One of the lightest-colored sizes available—and the most efficient!

***NEW!* CYFOR® ROSIN SIZE 4016A**
—A top-grade, fully fortified, 70% solids, modified gum size. Its low foam means highest size efficiency . . . and its good color (and competitive price) make it an excellent choice for mills making book, bond, ledger and board.

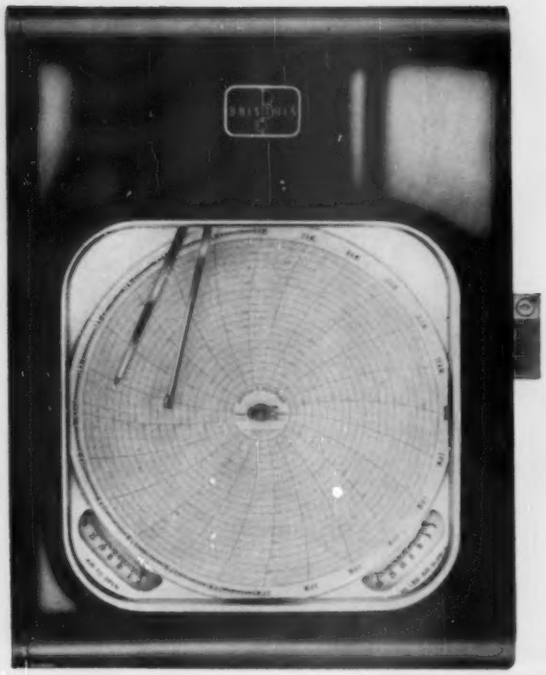
***NEW!* CYFOR® ROSIN SIZE 4029**
—Save on shipping and storage with this exclusive, 80% solids, fortified size! Cyanamid is the only manufacturer making it. What's more, the General Electric Brightness Indicator shows this size to have extra-light color. It contains the same high-quality gum rosin used in 4028!

These three new sizes are just a small part of Cyanamid's great family of sizes. At Cyanamid you'll find more sizes, and more types of sizes, than anywhere else! Count on Cyanamid always for the best possible sizes—at the best possible price. It will pay you to call your Cyanamid Paper Chemicals representative to talk over your size needs. He's equipped to help you with the best knowledge in the industry!

CYANAMID CYANAMID CYANAMID CYANAMID

AMERICAN CYANAMID COMPANY
PAPER CHEMICALS DEPARTMENT
30 Rockefeller Plaza, New York 20, New York
In Canada: Cyanamid of Canada Limited, Montreal and Toronto

LARGEST SUPPLIER OF CHEMICALS TO THE PAPER INDUSTRY



Your newest man can operate and maintain this controller

He'll catch on quick to the Bristol Series 500 Controller without a complicated, lengthy training period.

In fact, your plant can have Bristol Series 500 Controllers, even if you don't have a formal instrument department at all. Many small instrument users are doing this today. Yet the 500's performance is such that one of the largest, most widely known chemical companies in the country just bought seventy 500's for its exacting processes.

Here are the big reasons the 500's a favorite with all instrument users, both large and small: (1) Basic simplicity of the operating mechanism; (2) Bristol measuring elements insure the utmost accuracy.

Another big simplification: You can exactly calibrate the Series 500 Controller with only one single adjustment, even after complete disassembly and reassembly with replacement of parts.

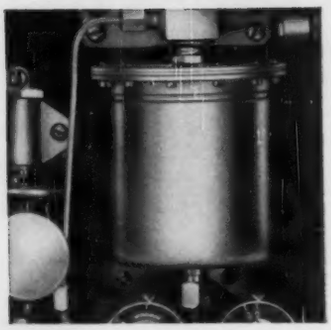
Get complete data on Bristol Series 500 Pneumatic Controllers now, before you order another instrument. Write for bulletin A 130, The Bristol Company, 142 Bristol Road, Waterbury 20, Conn. B-19

Several hundred standard models meet every process requirement including:

These problems:	These operating modes:
1. Cascaded control	1. Fixed narrow band (on-off)
2. Selective control	2. Proportional—to 100% and to 30%
3. Ratio control	3. Reset with wide band—to 400%
4. Time program control	4. Derivative (rate)
5. Pneumatic Transmission	5. Reset plus derivative

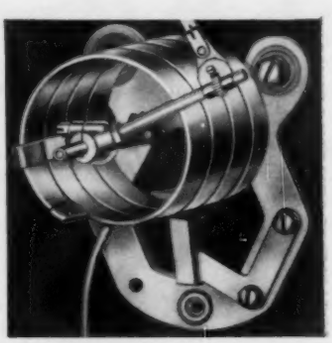
BRISTOL TRAIL-BLAZERS IN PROCESS AUTOMATION

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

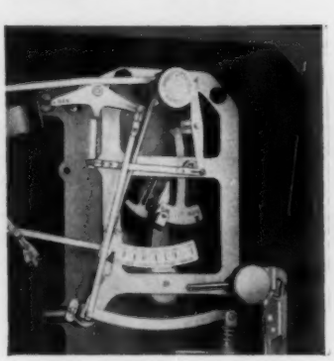


Reset Action Stops (in cylinder), another Bristol exclusive on reset models.

Zero Derivative Setting, exclusive with Bristol on derivative models.



Precision Bristol Measuring Elements insure accuracy.



Built-in Calibration assures permanent accuracy of controller action.

ALBACEL & ASTRACEL

CHLORINE DIOXIDE BLEACHED SOFTWOOD SULPHATE

CHLORINE DIOXIDE BLEACHED HARDWOOD SULPHATE

Balanced Paper-Grade Pulps Created by Papermakers for Papermakers

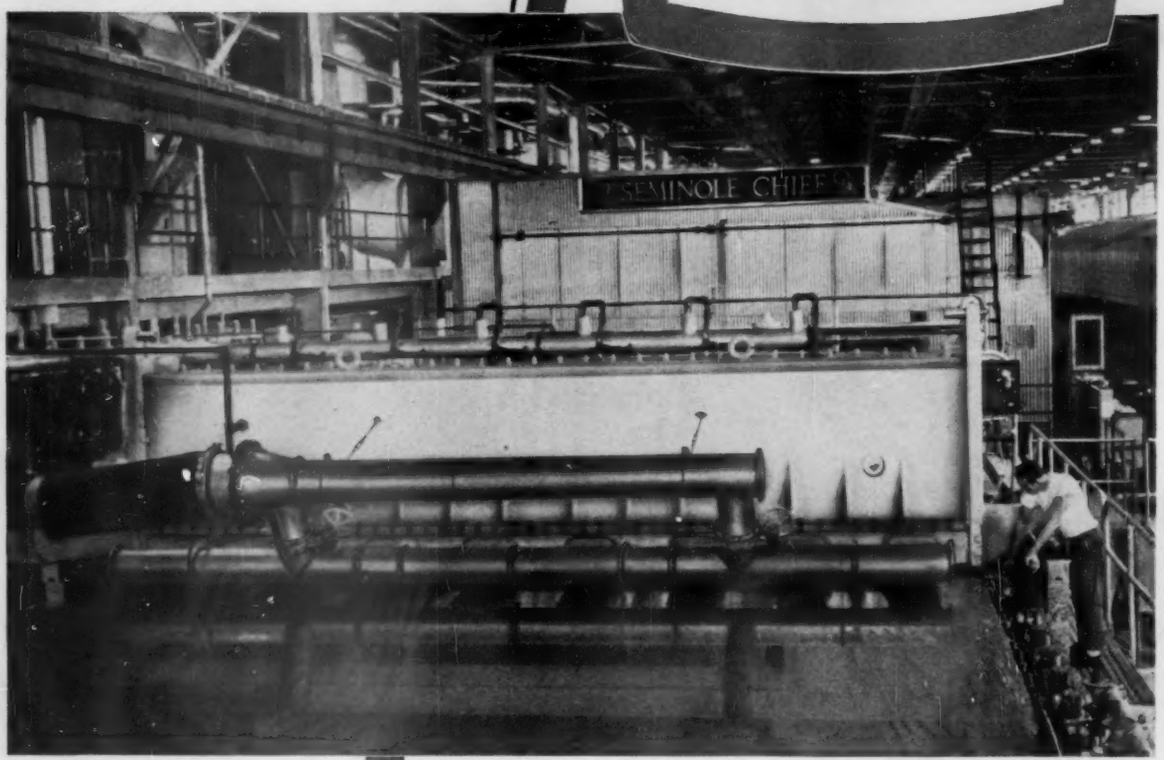
Throughout the free world, papermakers use and like Riegel's Albacel and Astracel paper-grade pulps that provide the right balance of all important qualities: brightness, cleanliness, strength, formation, and proper beating characteristics.

RIEGEL PAPER CORPORATION

260 MADISON AVENUE, NEW YORK 16, N. Y.

Another
pressure secondary headbox by....

VALLEY



On ..... St. Regis Paper Company's new giant paper machine at Jacksonville, Florida.

VALLEY IRON WORKS CO., APPLETON, WISCONSIN

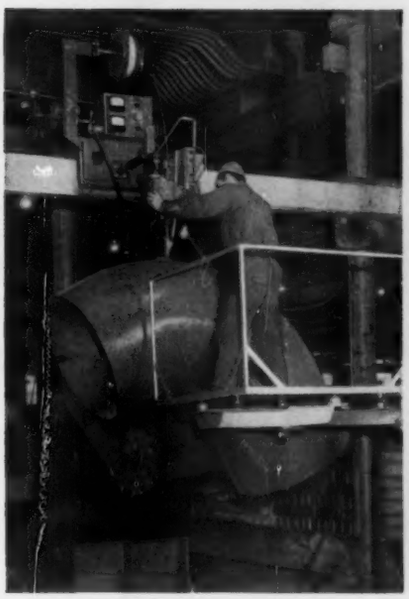
"SPECIAL" Welding Fittings by MIDWEST

"SPECIAL" DESIGNS
"SPECIAL" MATERIALS
"SPECIAL" QUALITY
"SPECIAL" DELIVERY

Special gauges and instruments are used to make sure that we have complied with the extremely close tolerances often required on stainless fittings. Here wall thickness and concentricity were held within extremely close limits throughout the fittings.

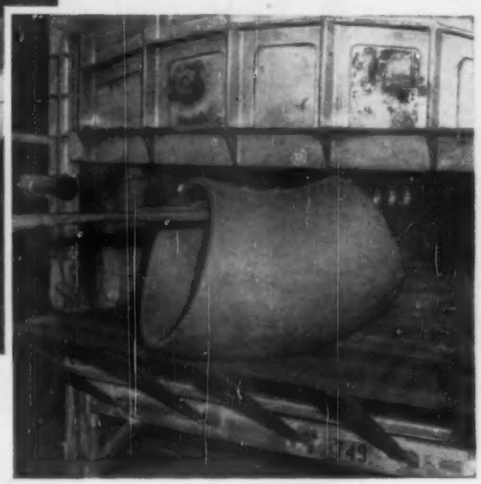
The exclusive Midwest method of manufacture—much more versatile and flexible than any other—enables us to make almost any type of special welding fittings to the most rigid specifications. Midwest makes welding fittings from *plate* . . . usually much easier to get than pipe, particularly if the material is special. That expedites delivery. Closer tolerances are inherent in the Midwest process, and quality control is always beyond code requirements.

Even if you use only standard fittings, the exceptional quality of Midwest fittings can be important to you. Ask your Midwest distributor or write us for new Bulletin 5801.



36" O.D. 90° elbow with 16" tangent on one end being welded by an automatic submerged arc machine. Material is A-201 carbon steel.

Stainless-clad elbows undergoing ultrasonic inspection to check bonding of material and quality of weld. Since plate is often the only form in which clad material is available, the Midwest process is able to produce the most comprehensive range of clad fittings—and to do so promptly.



Special 24" x 21" 45° reducing elbow made of 1" thick 1¼% chrome ½% moly steel ready for heat treating furnace.

MIDWEST PIPING COMPANY, INC.

Main Office: St. Louis 3, Mo. (P. O. Box 433)

PLANTS: ST. LOUIS, CLIFTON, N. J. and LOS ANGELES

SALES OFFICES:

Asheville (Box 446, Skyland, N.C.) • Atlanta 9—72 11th N.E.
Boston 27—426 First St. • Chicago 3—79 West Monroe St.
Cleveland 14—616 St. Clair • Houston 2—1213 Capitol
Los Angeles 33—520 Anderson • Miami 34—2103 Le Jeune
New York 7—50 Church St. • Pittsburgh 19, Pa.—437 Grant
San Francisco 11—420 Market St.
St. Louis 4, Mo.—1450 South Second St.
Tulsa—1640 E. 21st St.

STOCKING DISTRIBUTORS IN PRINCIPAL CITIES

8059

LOBDELL roll grinders for every purpose . . .

- CHILLED IRON ROLLS
- MACHINE CALENDER STACKS
- ROLL GRINDING MACHINES
- ROLL CALIPERS
- KNIFE GRINDERS
- ABRASIVE CUT-OFF SAWS

The latest 48" Type C. W. Lobdell Roll Grinder with 30½" bed, equipped with variable speed drives, will handle rolls up to 48" diameter, and with a face length of 270"—The Grinder shown below was recently installed at the Hollingsworth and Whitney Division of Scott Paper Company, Mobile, Alabama. Write for details of our latest design.

UNITED
ENGINEERING AND FOUNDRY CO.
948 FORT DUQUESNE BOULEVARD
PITTSBURGH, PENNA.

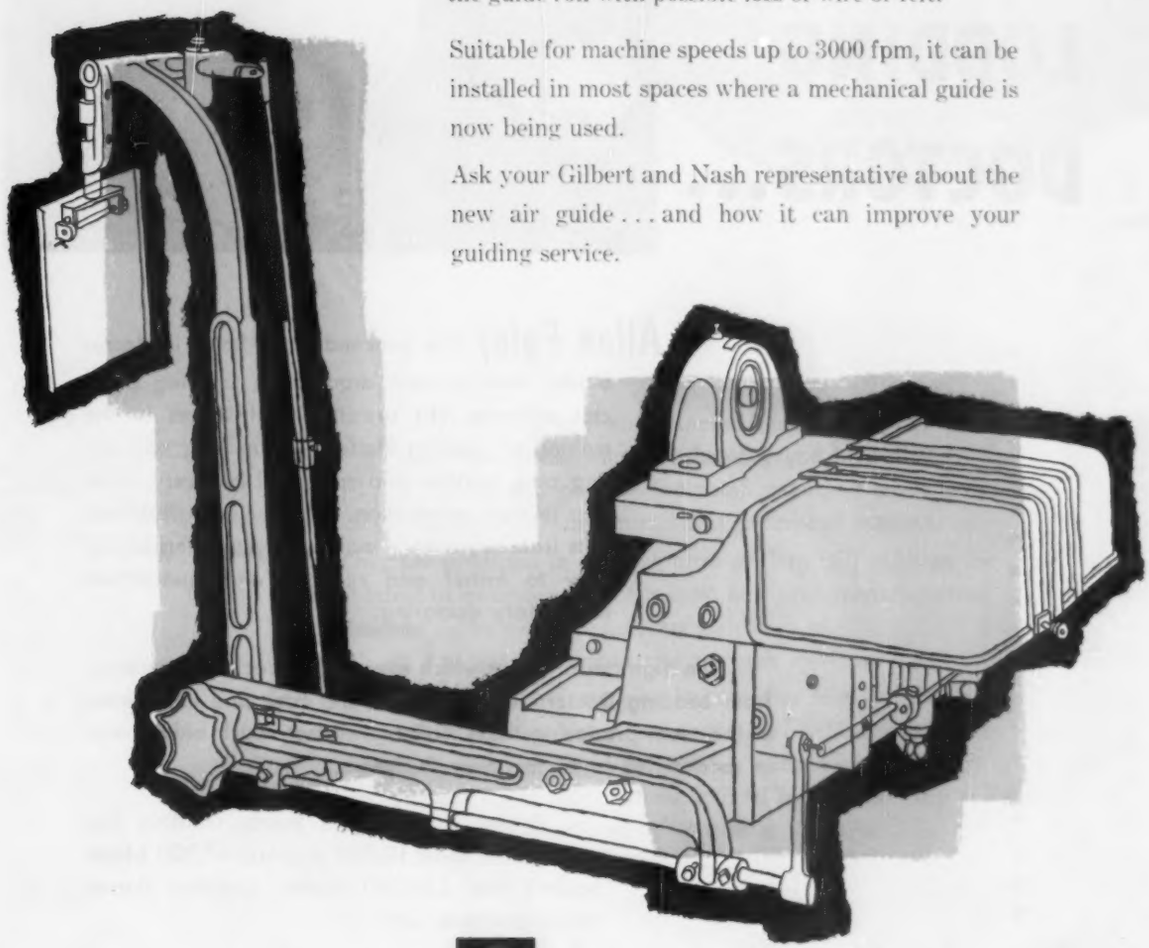
NEW AIR GUIDE FROM GILBERT AND NASH

Here's a new guiding service from Gilbert and Nash —an efficient economical air-operated guide. Simple, too, with a minimum of mechanical moving parts.

The Gilbert and Nash air guide has a constant rate of correction, regardless of machine speed. In the event of air supply failure, the guide remains stationary at the point of last correction. No springs to pull the guide roll with possible loss of wire or felt.

Suitable for machine speeds up to 3000 fpm, it can be installed in most spaces where a mechanical guide is now being used.

Ask your Gilbert and Nash representative about the new air guide . . . and how it can improve your guiding service.



Manufactured and sold exclusively by

APPLETON MACHINE COMPANY

APPLETON, WISCONSIN

Building the skill of experience into

LODDING DOCTORS...

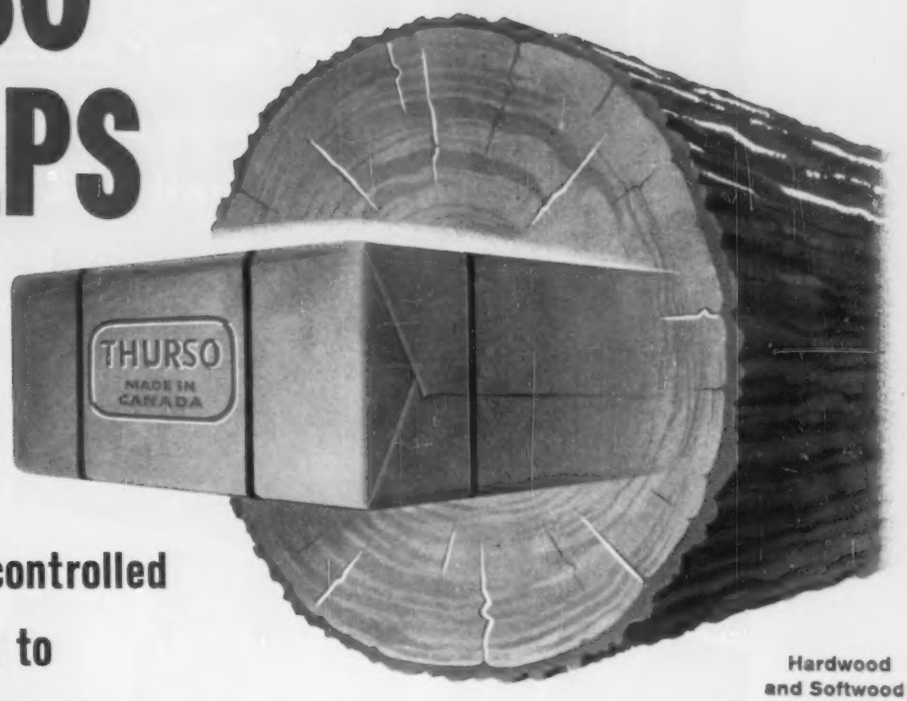
Allen Foley has punched more holes in doctor blades than anyone around the Lodding plant can estimate. His are the final stages in the making of Lodding Blades — punching and setting pins, buttons and springs. Like every other step in their production, the precision which results from experience makes a close-fitting blade, easy to install and remove, and guarantees satisfactory doctoring.

The high performance which everyone expects and receives from Lodding Doctors is the result of the care and experience of the team producing them. This is an asset which only comes in specializing in doctors over the years.

During the last ten years, Lodding has made more than 10,000 doctors, 17,000 blade holders and 350,000 blades. Lodding shares this experience with you.

LODDING ENGINEERING CORPORATION
WORCESTER, MASSACHUSETTS

THURSO PULPS



Hardwood
and Softwood
Bleached Kraft

. . . quality-controlled from forest to finished product

To supply you with superior market pulps of uniform brightness, consistency, workability and high quality, that help you produce top-notch papers—THURSO pulps are quality controlled from forest to finished product.

They are produced in our new ultra-modern mill utilizing the latest in equipment and the most advanced manufacturing techniques . . . to meet the exacting standards of our quality control and research sections.

Ideally situated adjacent to our own huge timber reserves, within easy reach of low-cost water transportation . . . Thurso is able to deliver the kind of pulp you want . . . when it's wanted.

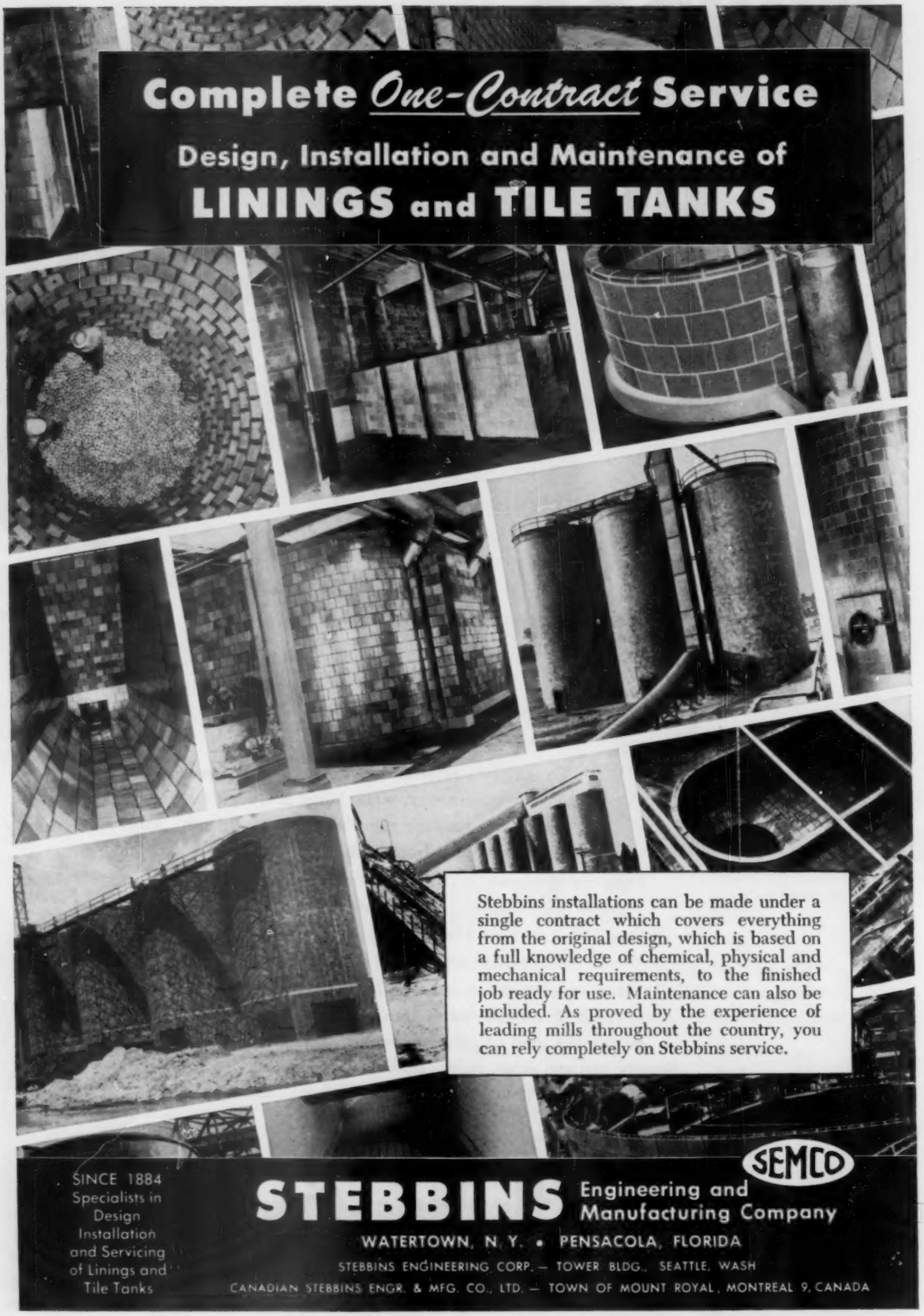
Specify THURSO Kraft pulps. Manufactured by Thurso Pulp & Paper Co., Ltd., Thurso, Province of Quebec, Canada.

EXCLUSIVE SALES AGENTS

Perkins-Goodwin Co.

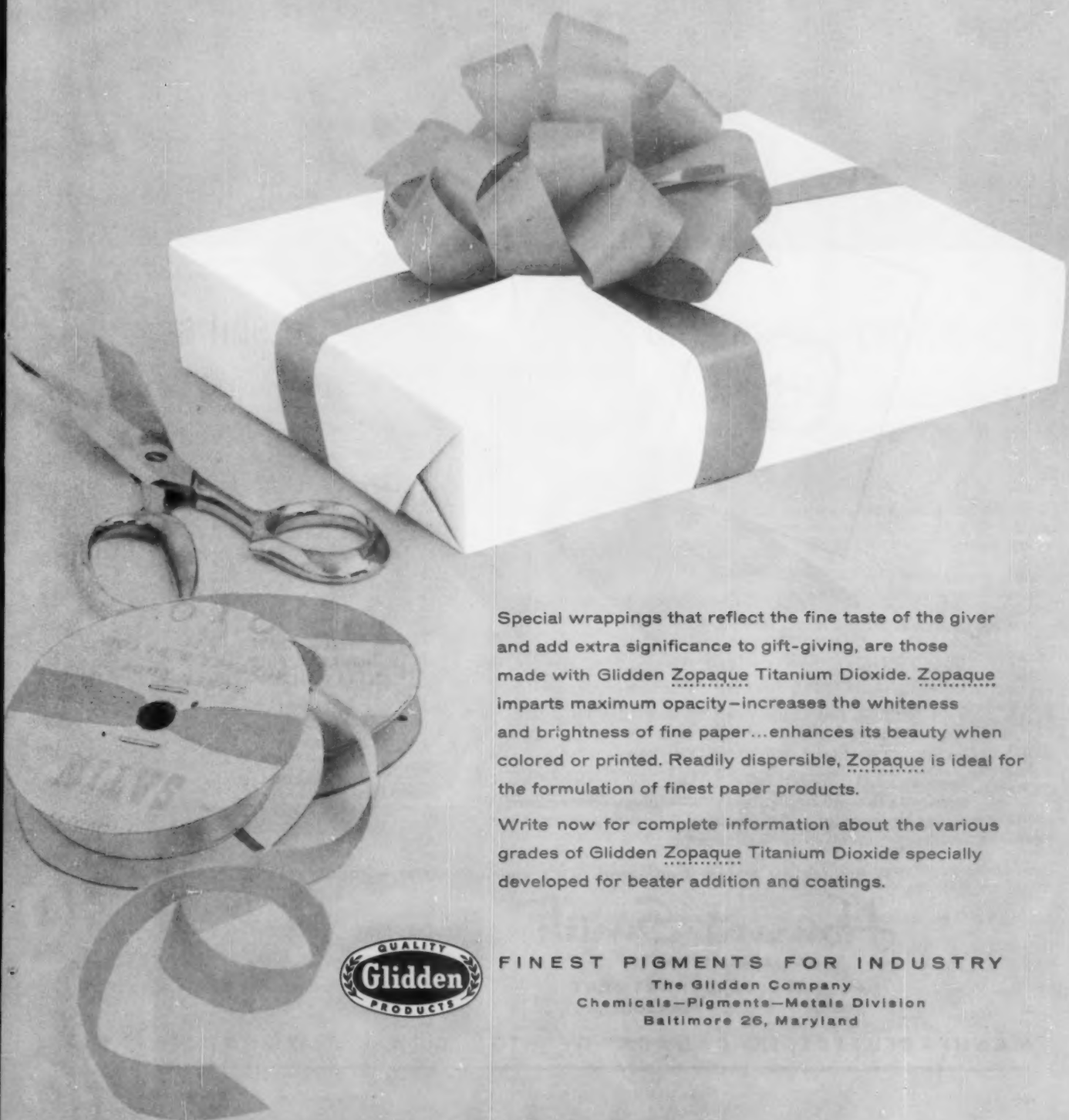
589 FIFTH AVENUE, NEW YORK 17, N. Y.

THURSO is a trademark of THURSO PULP & PAPER CO., LTD


Complete One-Contract Service
Design, Installation and Maintenance of
LININGS and TILE TANKS
Stebbins installations can be made under a single contract which covers everything from the original design, which is based on a full knowledge of chemical, physical and mechanical requirements, to the finished job ready for use. Maintenance can also be included. As proved by the experience of leading mills throughout the country, you can rely completely on Stebbins service.
SINCE 1884
Specialists in
Design
Installation
and Servicing
of Linings and
Tile Tanks
SEMCO
STEBBINS Engineering and Manufacturing Company
WATERTOWN, N. Y. • PENSACOLA, FLORIDA
STEBBINS ENGINEERING CORP. — TOWER BLDG., SEATTLE, WASH
CANADIAN STEBBINS ENGR. & MFG. CO., LTD. — TOWN OF MOUNT ROYAL, MONTREAL 9, CANADA

FINEST GIFT WRAPPINGS...

begin with Glidden Zopaque® Titanium Dioxide



Special wrappings that reflect the fine taste of the giver and add extra significance to gift-giving, are those made with Glidden Zopaque Titanium Dioxide. Zopaque imparts maximum opacity—increases the whiteness and brightness of fine paper...enhances its beauty when colored or printed. Readily dispersible, Zopaque is ideal for the formulation of finest paper products.

Write now for complete information about the various grades of Glidden Zopaque Titanium Dioxide specially developed for beater addition and coatings.

QUALITY Glidden PRODUCTS

FINEST PIGMENTS FOR INDUSTRY

The Glidden Company
Chemicals—Pigments—Metals Division
Baltimore 26, Maryland

At the Sign of the Beaver they're busy!

Busy combining knowledge and experience to produce new, better pulps for paper and allied industries.

Tree scientists and technologists of Howard Smith Paper Mills are developing ingenious new processes every year . . . turning a wider variety of trees into top quality pulps.

Research, and close attention to customer needs, go hand in hand with Howard Smith's reforestation programme — forests are constantly renewed and replenished. Scientific cutting assures a continuing supply of the best in pulp.

WELL-KNOWN QUALITY PULP TRADE NAMES

SEAGULL
Bleached Soda Pulp

STORMONT
Bleached Sulphite

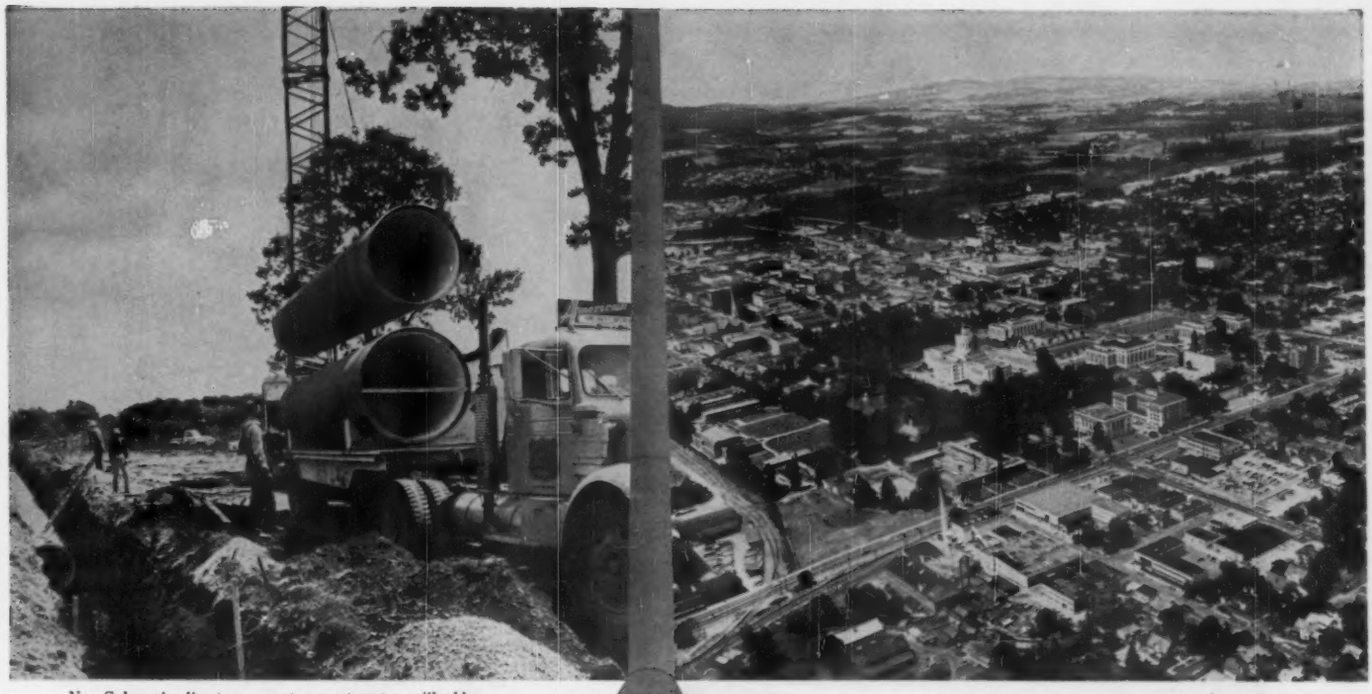
DONNACONA
Unbleached Sulphite

WINDSOR
Unbleached Kraft

Watch for the Beaver trade-mark — it's your guarantee of quality!

Howard Smith
PAPER MILLS LIMITED
PULP SALES DEPARTMENT
2300 Sun Life Building • Montreal 2, Canada

MANUFACTURERS IN CANADA OF HIGH QUALITY WOODPULP



New Salem pipe line to augment present system will add approximately 50 MGD capacity to city water supply system.

a line of growth... for Oregon's capital city

American Concrete Cylinder Pipe is helping Salem, Oregon to grow

A simple but important fact is that no city, however great its potential, can grow beyond the capacity and dependability of its main water supply system.

Recognizing this fact, and envisioning a population in 30 years that will require three times the maximum capacity of present water transmission lines, Salem, the capital city of Oregon, is carrying out a program designed to meet future needs.

Under the direction of the City's Water Department Manager, John L. Geren, and the technical supervision of Consulting Engineers Clark and Groff of Salem, an 18-mile pipe line of 48" and 54" diameter American Concrete Cylinder Pipe is being installed by Lord Brothers, a general contracting firm of Portland, Oregon. This new line will triple the present capacity of the supply system.

The performance record of this type of reinforced concrete cylinder pipe has been so outstanding throughout the West that Salem can be confident that this water "growth line" will be giving efficient, economical service for many, many years to come.

Strength, permanence, sustained high carrying capacity, and trouble-free service are characteristics of American Concrete Cylinder Pipe which make it the right pipe for this forward looking city.

When planning your future water "growth lines," look to American's quality pipe line products, extensive production facilities and half century of experience.

Ask for complete information concerning the particular class of pipe that will meet your design requirements.

Los Angeles:
P.O. Box 3428, Terminal Annex • LOrain 4-2511
Hayward:
P.O. Box 630 • JEfferson 7-2072
San Diego:
P.O. Box 13 • CYpress 6-6166
Phoenix:
2025 South 7th St. • ALpine 2-1413
Portland:
518 N.E. Columbia Blvd. • BUtler 5-2531

A SKILLED HAND IN CHEMISTRY . . . AT WORK FOR YOU

A NAME TO REMEMBER

. . . for pitch dispersing
. . . for slime control
. . . for size stabilizing
. . . for coating fluidizing
. . . for uniform dyeing

You will find it profitable to get all the facts about Nopcosant —Nopco's newly improved dispersant and solubilizer. Ask your Nopco representative for full details or write for complete information.

Remember, too, back of Nopco paper chemicals stands Nopco technical service—ready to assist with laboratory data and recommendations based upon your specific requirements. Nopco Chemical Company, 60 Park Place, Newark 1, N.J.

NOPCO®

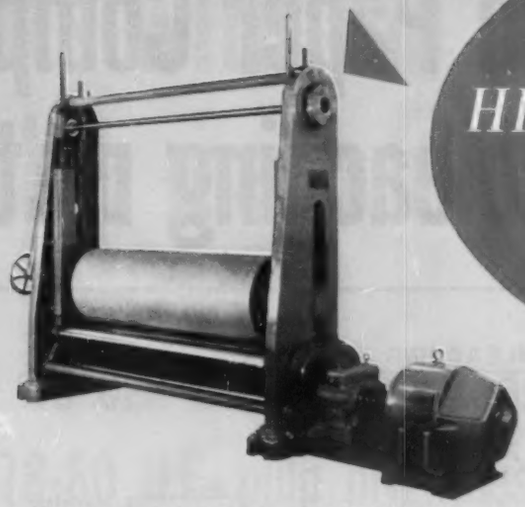
VITAL INGREDIENTS FOR VITAL INDUSTRIES

Plants:
Harrison, N.J. • Richmond, Calif.
Cedartown, Ga. • London, Canada

Properties of Nopcosant

- A fine powder of uniform particle size
- Dusts less than any other similar product
- Lightest colored product of its type
- One of the most rapidly dissolving products available
- The most nearly neutral *p*H in its chemical class

For HIGH SPEED... HEAVY DUTY applications Schmutz uses Wichita Clutches and Brakes



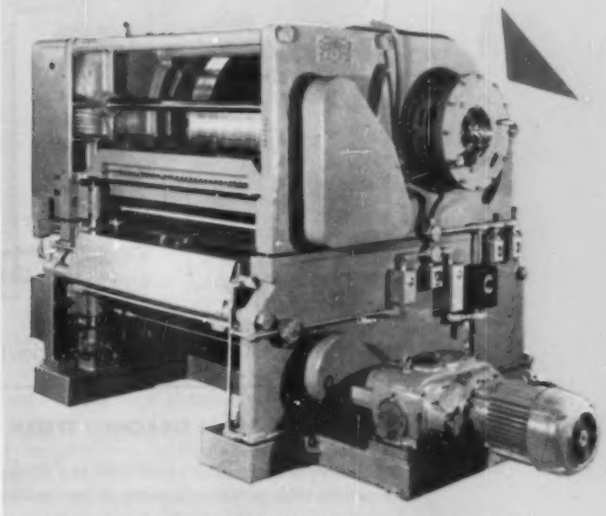
HEAVY DUTY PAPER ROLLING MACHINE . . . for rolls of paper to 60" and 86" width. Wichita Air Brakes used for variable hold-down pressure.

. . . other applications in the paper industry prove Wichita's all around performance too.

"fine control . . . simplicity of disc replacement . . . cooler running," say Schmutz Engineers

Paper handling and printing equipment is just a part of the famous Schmutz line of processing equipment for paper and other materials which provides the advantages of Wichita Clutches and Brakes. Schmutz Engineers have found disc type Wichita equipment gives: (1) finer control of tension. (2) simplicity of replacement of discs and interchangeability. (3) excellent air circulation and resultant self-cooling effect.

Whatever your braking or clutching problems you will find a Wichita combination to give your equipment better all-around performance and economy. Call your nearest Wichita Engineer.



INSULATING BOARD PRINTING MACHINE

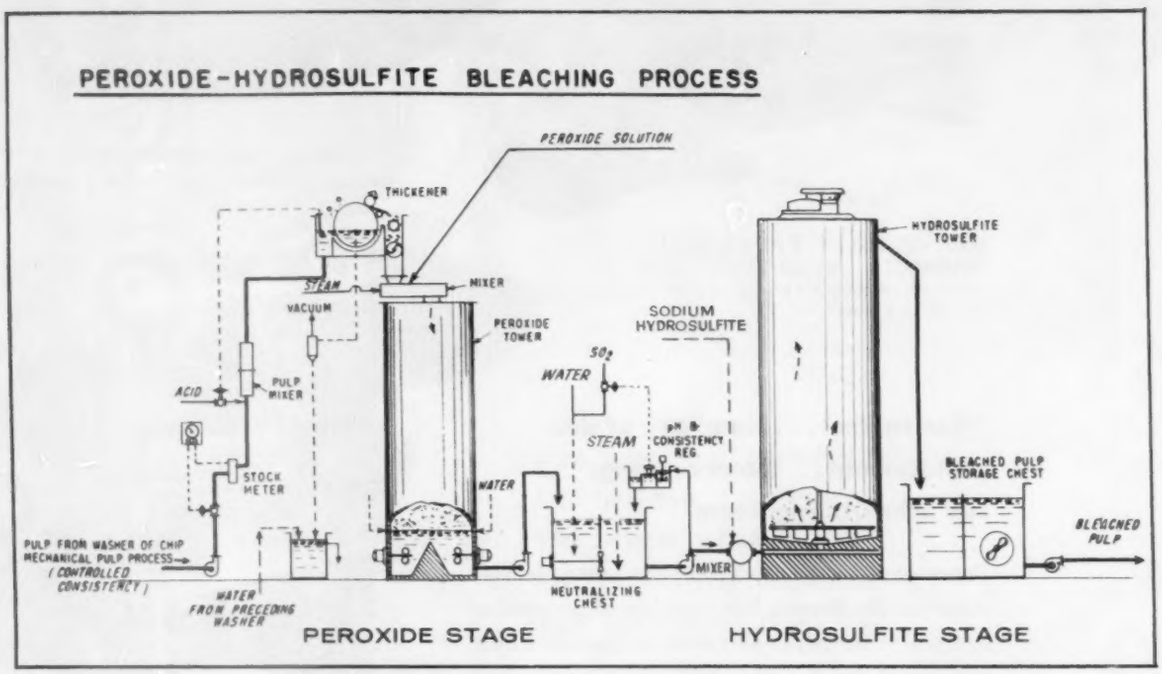
. . . eliminates need for a feeding conveyor. Positioning of imprinting on each sheet is handled by stop-start action as each sheet is fed in, up to 30 sheets per minute. Position of imprinting is variable by timer actuated by shoes at inlet to machine. Wichita low inertia Clutches and Brakes are needed for high speed operation with low inertia . . . starting and stopping an 800 pound printing cylinder, 40" diameter by 48" long. Brake is shown here . . . clutch is on other side.

Contact your nearest Wichita Engineer!

Brehm-Lahner, Inc., Detroit, Michigan
L. H. Fremont, Cincinnati, Ohio
W. G. Kerr Company, Pittsburgh, Pa.
Smith-Keser & Co., Avon, Conn., Philadelphia 44, Pa., and New York, N. Y.
Frank W. Yarline Co., Chicago, Illinois
Larry W. McDowell, Long Beach, California
Andrew T. Label, Denver, Colorado
Robert R. King Co., Cleveland, Ohio
Norman Williams, Houston, Texas
Allied Transmission Equipment Co., Kansas City 8, Missouri
Donald E. Harman, Dallas, Texas
C. Arthur Weaver, Richmond, Virginia
Malcolm S. Cone, Memphis, Tennessee
Dominion Power Press Equipment, Ltd., Burlington, Ontario, Canada
R. E. Kunz, Seattle 4, Wash.
W. G. Ballantyne Co., Portland 4, Ore.
Bates Sales Co., St. Louis 1, Mo.

WICHITA Clutch COMPANY, INC.
WICHITA FALLS, TEXAS, U.S.A.

How Gould Paper Company peroxide bleaching method



TYPICAL TWO-STAGE BLEACHING SYSTEM starts with washing the pulp to remove chemicals used in initial chip treatment. Next, the slurry is acidified and thickened to 15% consistency. It is then bleached with peroxide and neutralized with sulfur dioxide.

The pulp is next diluted to 4% consistency and pumped to hydrosulfite tower. After bleaching and washing, it is then pumped continuously into the bleached pulp storage chest. After an additional refining step, the pulp is incorporated into the paper furnish.

CHECKING PULP SAMPLE during acidification step prior to peroxide bleaching. Acidification step was suggested by Du Pont technical men to insure that pulp would be bleached to maximum brightness.

MASTER CONTROL PANEL keeps tab on entire bleaching process from beginning to end. Panel includes instruments that make trace recordings of data at critical points throughout bleaching process.

BLEACHED PULP is inspected by C. R. Lombard, Du Pont Technical Representative, after final washing before storage. Brightness is now 78-80 G.E. units . . . 35 points higher than unbleached pulp.

profits with the Du Pont for chip mechanical pulp

"Now we can use our hardwoods... get 78-80 G.E. pulp brightness... and we've upgraded our line"

—says R. W. Luethi, President and General Manager, Gould Paper Company, Lyons Falls, N.Y.

Gould Paper Company is the first to use the two-stage peroxide-hydrosulfite process for bleaching chip mechanical pulp. President R. W. Luethi reports: "We've been able to get into more profitable lines such as high-quality book papers since we adopted this process—and now we can use local hardwoods, such as birch, beech and maple, by the application of this cold soda process.

"Peroxide bleaching eliminates the yellowish cast our pulp had with our former hypochlorite system; it gives better whiteness and 78-80 G.E. brightness . . . *35 points* over unbleached pulp. Production is up, too, because of the better yield. In fact, plans are under way to double our present production by using this peroxide bleaching process."

DU PONT SERVICE CAN HELP YOU, TOO. Du Pont Technical Representatives worked closely with Gould's staff from initial planning to installation and operation of equipment. A special acidification step was developed by Du Pont to help Gould achieve pulp with maximum brightness. Practical technical men advised where Gould's existing equipment could profitably be used in the new system.

Du Pont know-how, gained through long and practical experience in the field of pulp bleaching with peroxides, made possible this modern bleaching process that Gould Paper Company is using so advantageously. Since Gould first went on stream, other mills have adopted this peroxide process for bleaching chip mechanical pulp and are enjoying its benefits.

SEND FOR FREE BOOKLET that describes in detail the Du Pont technique for bleaching chip mechanical pulp. Just write to the address below.

PEROXIDES **ALBONE®** hydrogen peroxide **SOLOZONE®** sodium peroxide

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

ELECTROCHEMICALS DEPARTMENT
Peroxygen Products Division

E. I. DU PONT DE NEMOURS & CO. (INC.)
Wilmington 98, Delaware

FIRST WITH PROCESSES AND SERVICES FOR PEROXIDE BLEACHING

St.Regis PAPER COMPANY *

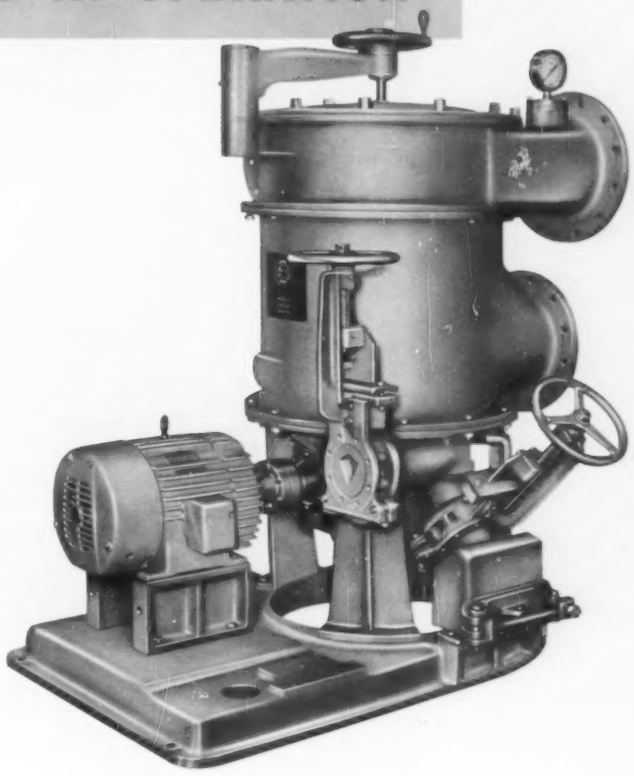
* 25 of the 25 largest paper companies use S-W rolls and roll re-covering service.

S-W . . . *roll service puts more profit in paper.*

STOWE-WOODWARD, INC. Griffin, Georgia • Newton Upper Falls, Mass. • Neenah, Wisconsin
On the West Coast: HUNTINGTON RUBBER MILLS, INC., Seattle 88, Washington

OVER 1300 BLACK-CLAWSON SELECTIFIER SCREENS IN OPERATION

Proof of Outstanding Performance on Any Grade



You buy experience when you install a Selectifier® Screen. You get the benefit of the experience Black-Clawson has gained during 18 years of research and development in pressurized screening. You get the assurance that comes with the screen that has established a record of successful performance on nearly every grade of paper and board in mills all over the world.

You get these operating advantages:

Ahead of the Paper Machine:

- Increased machine production . . . fewer breaks because stock lumps and slime slugs are removed.
- Clean stock . . . pins, shives and unwanted material removed.
- Improved formation . . . deflocculates fibre bundles and disperses the stock.
- Longer wire and felt life . . . clothing and precision equipment protected from damage caused by foreign objects.

In the Pulp Mill:

- Efficient performance on high consistency stocks.
- Removes shives, knots and uncooked chips.
- Ahead of washers, a Selectifier reduces amount of deckering equipment needed.

News about
Higher Capacity 36-P Selectifier Screen
on other side of page

FIRST CLASS
PERMIT NO. 51
SEC. 34.9 P.L.&R.
MIDDLETOWN, OHIO

BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in United States

—POSTAGE WILL BE PAID BY—

THE BLACK-CLAWSON COMPANY
SHARTLE DIVISION
MIDDLETOWN, OHIO

HIGHEST CAPACITY SCREEN IN THE INDUSTRY

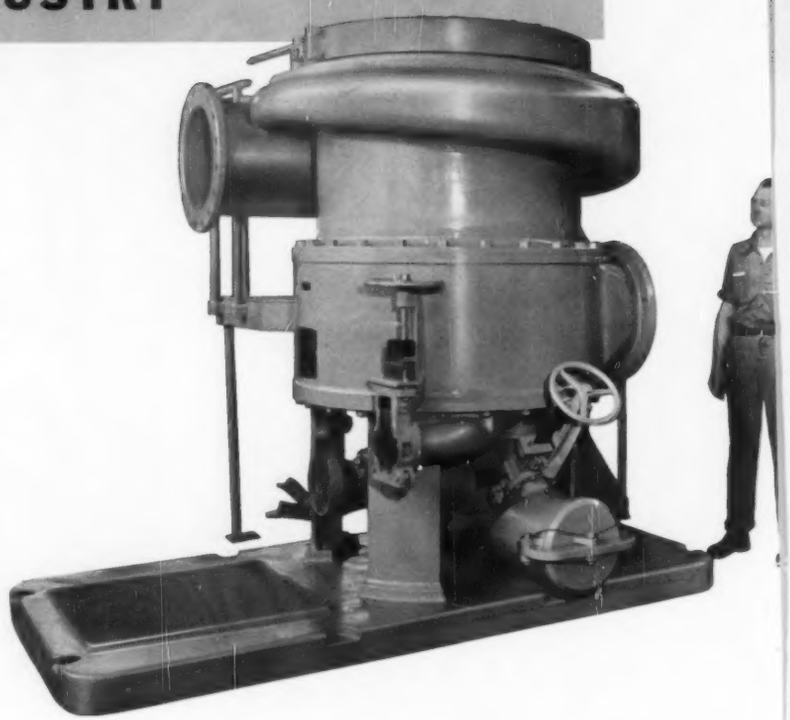
36-P Selectifier Screen Now Available for Pulp Mill & Paper Mill Application

Designed for use ahead of wide high-speed Fourdrinier machines and for pulp mill applications, the new, larger size totally-enclosed pressurized 36-P Selectifier Screen has 2½ to 3 times the capacity of the smaller 24-P and embodies the same general design. The Selectifier Screen has established acceptance in operation both ahead of paper and board machines and in pulp mills.

It cleans the stock, deflocculates fiber bundles, improves formation and increases production of a paper machine.

In the pulp mill, ahead of the washers, it gives better washing through improved formation of the mat, higher consistency screening, higher tonnages with low horsepower per ton.

The Selectifier Screen has proved itself in the pulp mill as the first successful pressure screen.

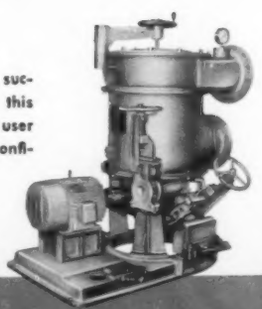


Black-Clawson Selectifier Screens are sold by:

SHARTLE DIVISION
MIDDLETOWN, OHIO
for use ahead of the paper machine

PANDIA DIVISION
HAMILTON, OHIO
for pulp mill applications

The record of over 1300 successful installations of this equipment provides the user with a basis for full confidence.



Gentlemen:

As offered in _____
Name of Magazine

send me detailed Selectifier Screen application data pertaining to grades or pulps listed below:

☐ Cylinder Board	☐ Nine point	☐ Groundwood	☐ N.S.S.C. .009
☐ Kraft (unbleached)	☐ Foodboard	☐ Kraft (unbleached)	☐ N.S.S.C. (bleached)
☐ Bond & Writing	☐ Tissue	☐ Kraft (bleached)	☐ Sulphite
☐ Printing	☐ Newsprint	☐ Kraft (hardwood)	☐ Other_____

☐ Other_____ _____

NAME_____ TITLE_____

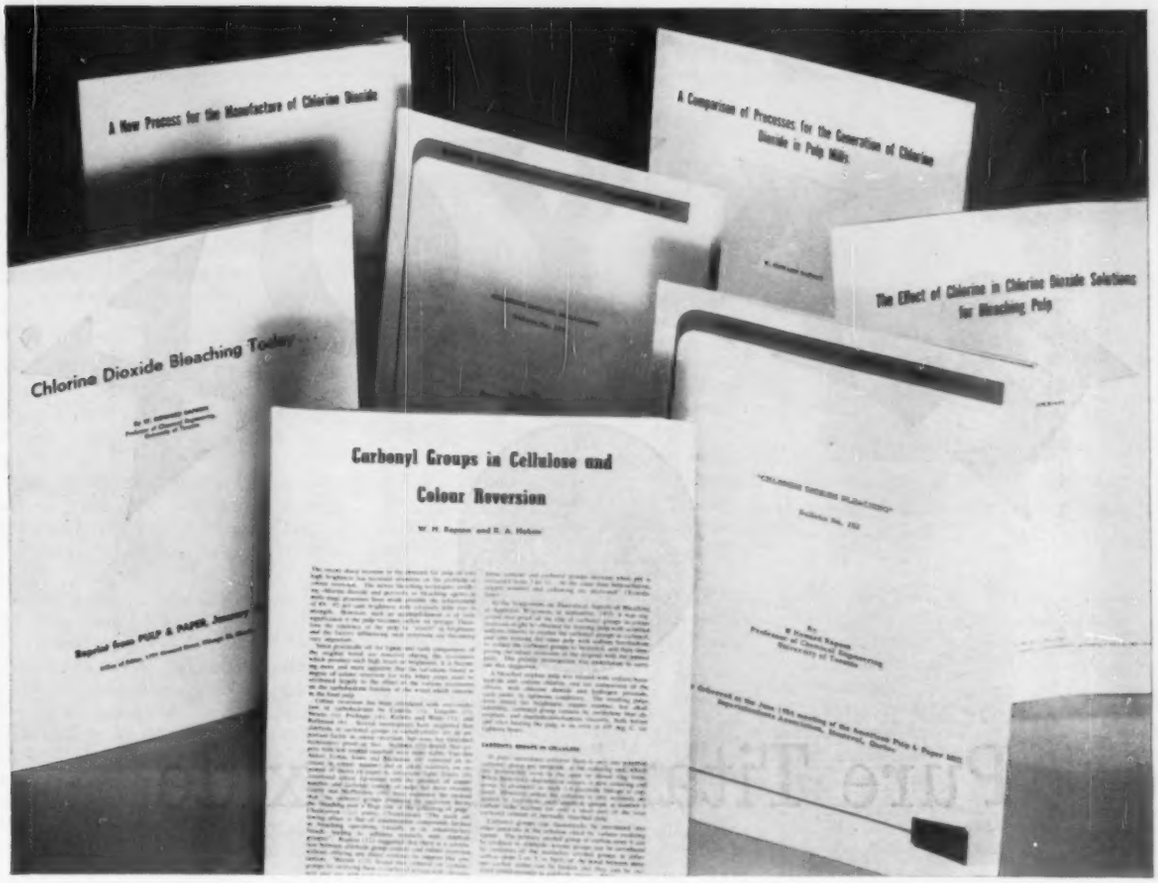
COMPANY_____

ADDRESS_____

CITY, ZONE, STATE_____

MAIL THIS CARD

for specific application and performance data on the grades or pulps of interest to you.


A New Process for the Manufacture of Chlorine Dioxide
A Comparison of Processes for the Generation of Chlorine Dioxide in Pulp Mills
The Effect of Chlorine in Chlorine Dioxide Solutions for Bleaching Pulp
Chlorine Dioxide Bleaching Today
Carbonyl Groups in Cellulose and Colour Reversion

CHLORINE DIOXIDE ROUNDUP

Above you see a collection of the more significant papers and bulletins published on chlorine dioxide.

At right you see a coupon which you are invited to use to send for those pieces you find most interesting.

This roundup is typical of the information collected by the Hooker Technical Service Department on chemicals used in the pulp and paper industry.

Gathering and disseminating such information is an integral part of our service to you who use such Hooker chemicals as sodium chlorate, chlorine, and caustic soda.

CHECK ITEMS YOU WANT:

- ☐ Bul. 222 Materials of Construction for ClO_2 Manufacture and Bleaching
- ☐ Bul. 221 A new process for the Manufacture of ClO_2
- ☐ Bul. 220 Chlorine Dioxide Bleaching Today
- ☐ Bul. 219 Carbonyl Groups in Cellulose and Color Reversion
- ☐ Bul. 218 Effect of Chlorine on Chlorine Dioxide Solutions for Bleaching Pulp
- ☐ Bul. 205 Comparison of Processes for the Generation of ClO_2 in Pulp Mills
- ☐ Bul. 204 Chlorine Dioxide Bleaching

NAME .....

TITLE .....

COMPANY .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

HOOKER CHEMICAL CORPORATION

1912 FORTY-SEVENTH STREET, NIAGARA FALLS, N. Y.

Sales Offices: Chicago Los Angeles New York Niagara Falls Philadelphia Tacoma Worcester, Mass.

In Canada: Hooker Chemicals Limited, North Vancouver, B. C.

HOOKER CHEMICALS PLASTICS

RAYOX®

Pure Titanium Dioxide

RUTILE AND ANATASE GRADES

For maximum
WHITENESS
BRIGHTNESS
AND OPACITY

R. T. VANDERBILT CO., INC.

230 PARK AVENUE · NEW YORK 17, N. Y.

Sees 5% to 7% Increase in '59

By JOHN R. KIMBERLY
President, American Paper and Pulp Association*

What about 1958 and beyond? Our industry economists expect production of paper and paperboard for this fall quarter will equal the rates a year ago.

The fourth quarter should be even better. Total 1958 production should be close to 30.5 million tons. This is less than 1% under 1957. And who knows? With that little bit of extra marketing effort, we may even beat last year's sales.

I want to stress that 1959 looks encouraging. We ought to expect a 5% to 7% increase over 1958 production and sales, somewhere around 32.5 million tons. Since the end of the war, the paper industry has been one of the fast growing industries. Like you, I'm proud to be in it. The steady growth in use of paper really makes these great years "The Paper Age."

Whatever the causes of our recent letdown, we can't blame lack of money, not enough purchasing power, not absence of desire on the part of all of us Americans for a higher standard of living. I suspect two of the basic causes were lack of faith and lack of enough hard sell. Perhaps also, not enough willingness to accept change. Henry Ford once was reported to say, "To the fellow who won't accept change, his funeral is only a formality."

We must educate and train in each of our companies all our people to be marketing-minded and to see, and make innovations. Here I'd like to suggest five goals we in the paper industry must reach with our employes:

1. The chief aim of the paper industry is to create profitable markets and satisfied customers.

2. We are in business to sell high-quality products to as many customers as possible. Our basic question is not, "How much can we manufacture?" It is, "How much can we sell?"

3. The customer is king. He keeps our business thriving—by paying our bills, employe wages and stockholder dividends. His (or her) wants and decisions to buy determine our present business and direct our future.

4. To satisfy our customers we need marketing-minded employes all along the line—from lumberjack to machinetender to traffic man to office clerk to salesman to executive. We need gifted, trained, well-motivated people—constantly interested in making innovations in their jobs. Only in this way will all departments contribute to a more dynamic, a more successful, a more profitable individual company—and industry.

5. And, finally, to accomplish these tough but interesting goals we must train our people in attitudes, actions, accomplishments. . . .

Comments on Russia

Khrushchev, and this is a personal opinion, is the first of the modern Russian leaders to stress salesmanship—of the American variety. His predecessors were largely oriental in their thinking; Khrushchev sees the tremendous power of American salesmanship know-how. But here's the rub: He's using our technique to advance the influence of Communism, particularly on world trade.

As Russia continues to grow in the development of her national resources, she is jockeying for the position of trade-dominator of the world. Once she gets control of world trade, the rest of her program would be easy, much easier and less expensive than war. (I personally don't fear a war; but I do realize a tremendous challenge from Russia to our American salesmanship.)

One reason why, until just recently, we have tended to sell Russia short as a world-trade power, is that we had so few facts about her economy.

What I'm trying to point out—in referring to this international situation and the far Eastern situation is a part of it—is that we dare not have a let-down in our efficiency or marketing efforts.

Equally urgent is our need for (political) representatives with commonsense, with knowledge of business and marketing—as we've defined it—and at the same time, with character: Men and women who will stand up and be counted on to advance our way of life.

MR. KIMBERLY, APPA chief and president of Kimberly-Clark—a smile for 1959 outlook.

* Excerpts from recent address before SAPI in New York City.

Moves Into New International Center

Dorr-Oliver Inc. has centralized its main offices and its worldwide engineering operations in a new ultra-modern, well-lighted and appointed 2-story structure on a 20-acre site on Havemeyer Lane, Stamford, Conn.

Important step for this industry is the centralization of its Pulp and Paper Technical Division in commodious quarters on the second floor of the building. The engineering staff and facilities have been brought to Stamford from Oakland, Calif., bringing together all engineering activities in a single location.

An important new advantage for the Pulp and Paper Division is that it is in the same building with Dorr-Oliver's other engineering staffs in chemical, sanitary, base metals and other fields. Thus, pulp and paper engineers will be able to conveniently and quickly call on other divisions for assistance on special problems.

An open house was held recently at the new headquarters to which several hundred executives from various fields were invited. Hosts were J. Delano Hitch, Jr., president, John V. N. Dorr, honorary board chairman, William L. Oliver, vice chairman, and other officers and members of the Dorr-Oliver staff.

These included Ward Pitkin, veteran director of the Pulp and Paper Technical Division. Dorr-Oliver continues pulp and paper sales and service in Oakland as in other cities.

Glassine Mill 2-Year Program Upgrades Quality, Efficiency and Flexibility

Installation of the largest supercalender presently producing glassine paper in the United States has brought to completion a two year renovation program at Hartford City Paper Co., Hartford City, Ind.

The 16-roll supercalender will service all three of Hartford City's Fourdrinier paper machines, which trim net from 76 to 100 inches. The supercalender was purchased from Joseph Eck & Sons, Düsseldorf, Germany, through Rice Barton Corp. and is balanced to run 1,000 ft. per minute. Nip pressure on the king roll is 3,000 lbs. per lineal inch.

Hartford City Paper Co., a pioneer producer of glassine and greaseproof paper specialties, has been a wholly owned subsidiary of Minnesota Mining & Manufacturing Co., St. Paul, Minn., since 1953. In addition to glassine and greaseproof specialties, Hartford City manufactures basic paper stock for copy papers produced by 3M's duplicating products division.

Clifford L. Kraning, vice president and general manager of the firm, noted that other major phases of the renovation program included the installation of a third paper machine, a 123-in. Black-Clawson Fourdrinier, complete renovation of the firm's two original paper machines, installation of a completely new stock preparation system, and major rebuilding of the areas housing all three paper machines.

Laboratory facilities were greatly expanded and completely modern equipment is now employed in control of incoming materials, process control, and quality control of finished goods.

New equipment includes two new Type 18 Cameron slitters, both equipped with constant tension devices, which enable the firm to produce uniformly high quality level wound rolls. The slitters are designed and balanced to run 1,500 ft. per minute, trimming rolls ranging in width from 5 ½ to 100 in.

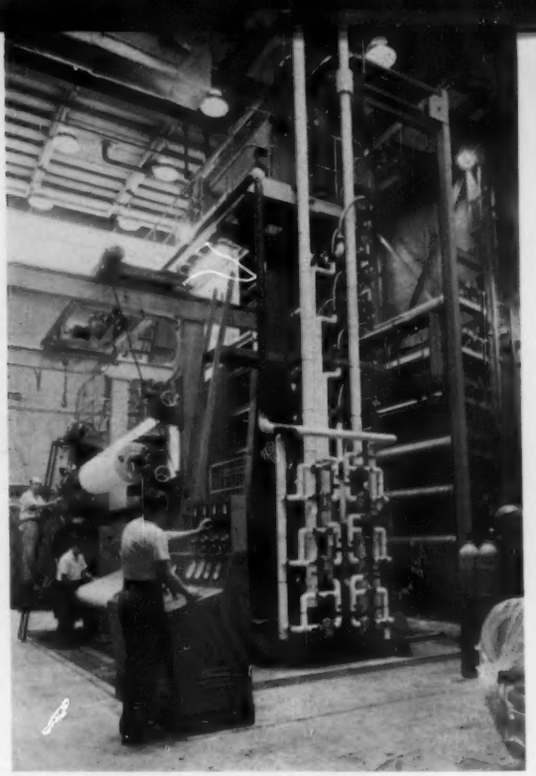
Rebuilt Paper Machines

No. 3 machine was purchased from Lee Paper Co. and was rebuilt. It trims 10υ in. A new Black-Clawson press section (the machine's third press section) has been added, incorporating a plasticizing section for treatment of glassine grades. A new Patton Pope reel was also added, as was a completely new exhaust and ventilating system. The machine is balanced to run 600 ft. per minute and has a production capacity of about 15 tons per day of glassine and greaseproof grades.

Remodeling of No. 1 machine, a 119 in. wire width, trim 96 in., included the installation of a new Valley Iron Works inlet and a new Patton Pope reel.

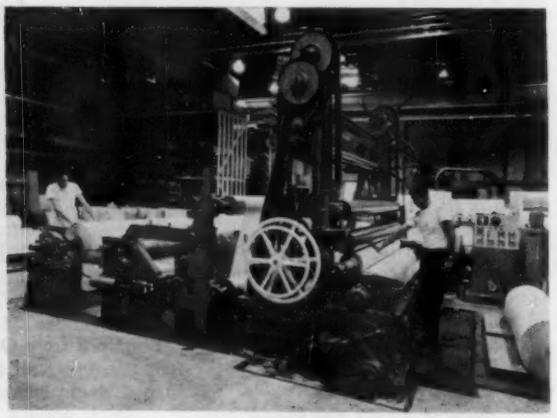
No. 2 machine was given a complete new wet end and press section provided by Manchester Machine Co. and new Pope reel. No. 2 section provided by Manchester Machine Co. and new Pope reel. No. 2 has wire width of 96 in., trimming 76 in. New savealls were installed on both machines.

An entire new stock preparation system, feeding all three paper machines, has been installed. This includes four E. D. Jones 2,000 lb. beaters, two Jones Hi-Lo pulpers, and a Jones high speed refiner. New, all-tile beater chests and machine chests have also been installed.



BIGGEST FOR GLASSINE paper in U.S. is this Joseph Eck supercalender, with 16 rolls, balanced to run 1,000 fpm.

REBUILT STOCK PREPARATION area, providing more flexibility, features E.D. Jones beaters, Hi-Lo pulpers and refiners.



ONE OF TWO new Type 18 Cameron slitters producing high quality level wound rolls, designed and balanced to run 1,500 fpm.

First Fine Paper Mill in West Canada Is Planned, Also a New Flakeboard Mill

Powell River Co., which has invested more than $50,000,000 in new plant and equipment since World War II, launched a new program of expansion with the announcement by President M. J. Foley in Vancouver, B.C., that $8,000,000 will be spent on early construction of the first fine paper mill in Western Canada and a new unusual flakeboard plant.

Provided prices for plant and equipment conform reasonably with company estimates, a start will be made before the year-end on the fine paper mill. Engineering studies have been in progress several months.

While specific location of the paper mill has yet to be determined, the flakeboard plant will be adjacent to the lumber operations of the Powell River subsidiary, B.C. Manufacturing Co., in New Westminster. Capacity will be about 100,000 sq. ft. daily, the product being processed from cedar by slicing thin wafers from wood and reforming them into boards by bonding with resins. The board is described as dimensionally stable, free from warping or twisting, light and strong, with an attractive appearance.

Probably the nearest approach to flakeboard produced in British Columbia is the hardboard manufactured by Pacific Veneer Div., Canadian Forest Products, also at New Westminster, although the process is quite different.

In Canada, the nearest fine paper mill is at Fort William, Ont., where Abitibi Power & Paper Co. has its Provincial Paper subsidiary.

Powell River Co., which controls the Brooks-Scanlon lumber operations in Bend, Ore., has been waiting for an upturn in the market before going ahead with construction of a planned pulp or paper mill in the Deschutes, Ore., area. Also in abeyance is a proposed mill at Kitimat, B.C., using power generated at Kemano.

See Rapid Growth in 1960s

"We find no reason for pessimism about any of our wood products," says M. J. Foley, president of Powell River Co. "The immediate prospects of our company are good, the long-term prospects excellent. We expect another period of rapid growth to begin in the early 60's. Increasing literacy throughout the world provides much larger long-term possibilities for paper."

He said a pilot plant is making satisfactory groundwood from sawdust, increasing the value of sawdust from $5.50 to about $25 a ton.

Mr. Foley told PULP & PAPER if Powell River "irons out a few remaining problems, we may establish flakeboard plants in eastern Canada and the U.S. for this product.

Nor has Powell River Co. reached "the end of the road" in newsprint production. "Should there be any sudden upsurge in demand," says Mr. Foley, "we are in a position to move quickly and economically. We have a site available for a No. 10 machine at our present mill alongside No. 9 machine. Many ancillary facilities built for No. 9 would also serve No. 10 machine."

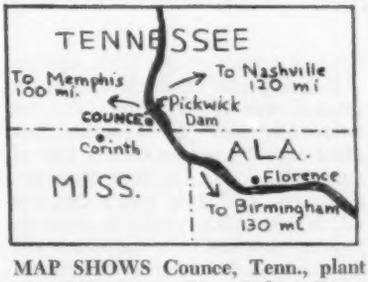
See Major Growth in Far West

Mr. Foley believes that the Stanford Research Institute's prediction of population growth in the Pacific Coast states (75% by 1975) and in the Mountain states (66% by 1975), compared with a 35% population increase for the U.S. as a whole, is being borne out.

"About 350,000 tons of additional newsprint capacity was built in the Western region during 1957-1958, coinciding with the current recession. Expected consumption in 1959 is about 1,100,000 tons, leaving surplus capacity of about 20%. We estimate it may be in 1962 to 1964 before consumption in the region balances capacity. There seems no immediate prospect of growth in offshore markets which could materially alter this picture, except, of course, if the Chinese market, with its huge potential, were opened to us. This year we are operating at about 80% of capacity and we expect a gradual rise in this percentage over the next three or four years."

MILTON JOSEPH FOLEY . . . making groundwood from sawdust; ready to go with No. 10 newsprint machine, when market justifies.

Site Chosen For Tennessee Co. Mill



MAP SHOWS Counce, Tenn., plant site of Tennessee River Pulp & Paper Co.

Very few major moves in this industry have attracted as wide interest and expectancy as the announcement finally made by G. W. E. Nicholson, president of Tennessee River Pulp & Paper Co., as to the site chosen for its new mill.

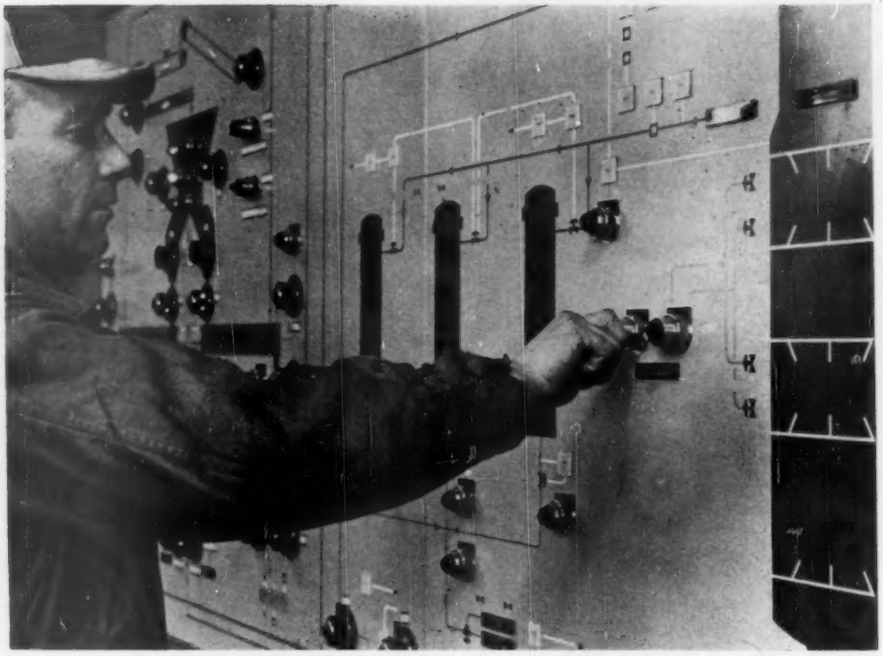
The company is exercising options on land for a plant site at Counce, Hardin county, Tennessee, now a village of a few hundred people. It is just below the Tennessee River's Pickwick Dam.

A 500 tons per day kraft pulp and containerboard mill will be built at Counce, Mr. Nicholson has advised PULP & PAPER. For many months the company has been organizing development of its timberlands in the area. Several boxboard companies, which will obtain their supplies from the new mill, are backing the enterprise.

Mr. Nicholson was undecided for a long time as to whether the mill should be built in Tennessee, Alabama or Mississippi, the three states which meet on the Tennessee River, within a few miles radius of Counce (see map). The choice was finally made in favor of Counce, which is on the western shore of the river, just above the Mississippi state line.

This will be Tennessee's 12th mill —13th counting Bowaters' new hardboard mill now under construction— and one of the few in western Tennessee. It is generally understood that Tennessee made a site within its borders more attractive than other states, though many factors probably entered in the decision.

Southern and Southeastern Superintendents Meeting



THIS ONE-MAN INSTRUMENT PANEL for control of digester, washing, refining in the South is one of the keys to . . .

Completely Automated Mill

Can this be our look of tomorrow? Champion's John Stephens challenges Southern Supts: "Use aids which are available to you."

By WILLIAM F. DIEHL JR.
Southern Editor, PULP & PAPER

Chattanooga, Tenn.

● This will be the pulp and paper mill of the future: a completely automated plant with the process controlled by a card containing the specifications of the product, be it pulp or paper. Automatic recorders and controllers on all chests and lines. Instrument-monitoring of the entire process with cutoffs and alarm horns throughout.

Human error will be eliminated but his brains will run the show.

This was the enlightening look at the future presented by Champion Paper & Fiber's John Stephens, of Canton, N. C. His discussion, "An Engineer's View of Pulp Mill Automation" was one of the high spots at this year's Southern and Southeastern Superintendents' meeting, which held forth at Chattanooga's Read House.

But Engineer Stephens' look at the present was rather grim. "We are notoriously slow in accepting new ideas and this is particularly true of automation," was his dour comment. Examples: Old style batch digesters which are bulky, costly to operate, require man-hours of attention; old type screens requiring continuous attention; equipment which could be operating by itself—but isn't.

Describing a beautiful new control panel at a large Southern mill, he said, "This is obsolete already." His reasoning: All the aids available to designers had not been used. The panel was behind the times before it was built.

Equipment people, continued Stephens, are providing the industry with up-to-date systems but as a whole the industry's procrastination in accepting them, is discouraging. A possible result: Failure to accept new ideas could result in a slow-down in progress.

One problem, he said, is that too often small individual areas in the mill are automated, without an overall look at the process. Pulp mill process designers must make their needs known to the engineer and the entire process should be considered rather than just component parts.

"A fully automated pulp and paper mill is not outside the realm of possibility," he said. "Even though cost is a major factor, the overall cost of operation must be considered before it is deemed impractical."

What Are Some of the Aids?

Here are ways in which operations can be modernized:

1. Continuous digesting—one man operating from one location; feed is regulated by predetermined setting; time and pressure preset; little "man-

ual observation necessary."

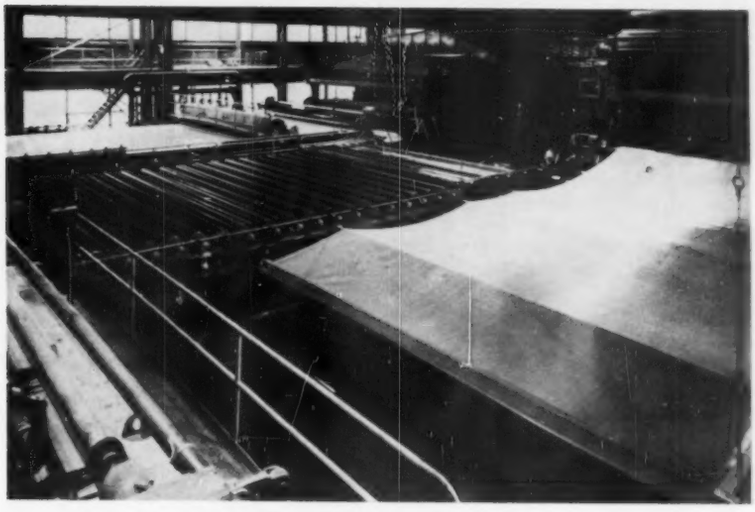
2. Pulp washing—time honored tradition that vacuum washer needs constant attention is outdated. Recording, discharge, control can all be preset by one man, including wash water.

3. Screening and bleaching—can be preset and fully monitored automatically. Monitors are available which constantly check the process, sound the alarm when anything goes out of whack; are self-enunciating, self-correcting, hold up entire process that might overload or overflow the equipment. Example: Pulp chest with monitor that corrects high or low level, sounds alarm, holds up whole system until correction is made.

4. Instruments—all controls and recorders should be in one place and in logical order so they can be supervised and monitored by one man.

Other aids to consider. Memory circuits, computers, static switches. "Don't get rid of the human, get rid of the human error," concluded Mr. Stephens. "Rely on the operator to set the instruments, establish the specifications. Rely on the instruments to make instantaneous corrections."

His closing comment was food for everyone's thought: "If it is necessary to scrap a process control, then it was poorly conceived to start with. They should all be designed in this time and age to permit changes and improvements."



FAIRLY FREQUENT WIRE CHANGES—as shown in this new Southern mill —are a necessary evil, but Bowater's Fuller says

You Can Improve the Life of Your Wires

What are the causes of poor wire life? Doug Fuller, Bowaters Southern assistant paper mill supt., dug into this subject, one which is of universal interest since Fourdrinier wires are a major cost item to papermakers. (At one mill cost varies from $1.30 to $2.80 per ton of newsprint production.)

Dividing wire life "gremlins" into two classes—wear and damage—here is what speaker Fuller came up with:

1. Downward jams—the most frequent damage factor. CAUSE: Stock or foreign matter being forced between the wire and the first outside, or wash, roll, resulting in depression in wire which gets more than its share of wear going over flat boxes. REMEDY: All wire rolls, especially outside rolls, should be equipped with good fitting, oscillating doctors, as well as means of removing doctored material off the edge of the wire; knock-down shower should be properly located, cleaned at least once a shift to prevent clogging; close watch should be kept on couch pit to prevent stock from building up and touching wire; a false ceiling should be built over wet end to prevent dirt from falling off ceiling or overhead crane; stairs, headbox, fans should be closely watched to prevent dirt from blowing on machine.

2. Upward pimples—not as serious as downward jams. CAUSE: Hard stock, foreign matter, scale, rust, loose parts, etc., forced between the wire and inside roll, deflector or flat box. REMEDY: Once again, good housekeeping. Shower water should be clean and filtered; shower pipes cleaned on down days; high pressure (600 to 800 lbs. pressure) should be used; filters should be inspected for holes; wire should be hosed down and cleaned immediately upon shutdown to prevent hard stock; tray pans, saveall pans, etc., should be constantly inspected.

3. Ridges and wrinkles—usually formed after wire is installed. CAUSE: Misalignment, deflection, whipping, out-of-round or unbalanced rolls. REMEDY: Fourdrinier should be kept level and square with slice; flat box covers should be ground level; rolls should be kept in dynamic balance for operating speed used; all equipment should be rigid enough to prevent sagging.

4. Edge cracks—cracks on front or back edges often shorten wire life. REMEDY: Frequent inspection of the edges while running to assure that they are noticed early and trimmed off or the edge patched by plastic before they cause wire to tear off. Some mills work closely with weaver to assure correct tension in the edges to fit their conditions.

5. Wire tear-off—good wire fails instantaneously and tears across. CAUSE: Sudden change in tension at one point due to quick change in flat box vacuum, motor loads on driving rolls, large splits or holes that are unnoticed upon installation.

"Be Lucky . . . and Good!" Safety is No Accident

"Sometimes," said Georgia Tech coach Bobby Dodd recently, "it is better to be lucky than good." But Walton Carter, safety engineer for Owens-Illinois' Valdosta, Ga., mill, paraphrased a bit. "When your luck runs out, you gotta be good."

It took a combination of both, he admitted, for the Valdosta mill to rack up a total of 1,900,000 man-hours without a lost-time accident. How did they do it? It sounded simple, the way Tech-graduate Carter described it.

Men were first handpicked for their individual jobs and given a seven-day course which included several movies and lectures on safety. Biggest boost to safety, however, is O-I's three-point program:

1. Employe safety education—most important phase since 83% of accidents in this industry last year were caused by human failure.

2. Supervisor responsibility—supervisor must sell accident prevention to his men.

3. Top management support—this is the beginning of a chain reaction.

SUPTS. AT CHATTANOOGA

What the Industry Means To the Average Southerner

"A lot of folks here in the South don't like the paper industry, or at least say they don't like the way we do business," said Maynard Stitt, public relations manager of St. Regis' Pensacola mill. "It's my suspicion that we've been making paper so fast we haven't taken time out to make sure they DO understand."

St. Regisman Stitt went on to explain just how important the industry really is to Dixie. The 1956 facts sing an eloquent tune: The Southern industry spent $400 million for wood into millyards at $20 a cord; less than 4 million cords came from company-owned lands; landowners, producers and railroads were paid more than $328 million, close to a million dollars a day; and finally the industry hired 77,000 persons during the year to the tune of $372 million in salaries and wages. His message was simple: Spread the word.

OFFICIAL HOST AND HOSTESS. Chairman of Southern Superintendents, Riegel Carolina's J. D. DAILEY, introduces daughter MYRA, who attended as substitute "hostess" in absence of Mrs. Dailey. Myra was excused from college to attend the Chattanooga meet.

Container Corp. Mill Devises New Way to Use Hygrotester

A means of continuously testing and controlling weight and moisture has been devised at Container Corp. of America's Fernandina Beach, Fla., mill. They believe it is to be unique in the industry.

The system, described by Container's Fernandina technical director, C. L. Rucker, uses AccuRay and the relatively new Hygrotester manufactured by the Paul Lippke Co. of Germany.

Realizing that laboratory basis weight scales and moisture meters are inadequate to measure the very important paper variables, weight and moisture, the Fernandina employs AccuRay for basis weight measurement, Hygrotester to measure moisture.

The Hygrotester employs a scanning detector or "shoe" to scan the sheet as it passes between the second calender and reel drum. Signal is recorded on a profile strip chart recorder as per cent moisture at the dry end of the machine. It is also recorded on a dot chart as average moisture.

The AccuRay detector rides a track over the dryer roll. Output signal is converted to pounds per thousand sq. ft. and recorded on a strip chart at the dry end of the machine and on a repeater strip chart recorder at the wet end. Together, these two tell the machinetender how much the sheet may be light or heavy and at what position on the machine headbox to make corrective adjustments.

Instead of the paper tester weighing a few square-foot samples from each reel of paper on a laboratory basis weight scale, he turns the chart speed on the strip recorder to a faster scan just before the reel is turned up. At the completion of the scan he turns the recorder off and uses the center line of the adjustable scale to locate the average weight of the scan. This goes down as average reel weight. This scale is also divided into machine headbox slice positions so he can quickly determine at what position on machine the basis weight is out of limits.

These "out of limit" weights are also recorded on the lab report. At completion of this weight check the paper tester returns the chart drive to the slower speed. The machine and backtenders can then watch the chart for machine direction variations in weight.

The moisture check for each reel is made in much the same way. Using this method of moisture and weight determination Container Corp. is accepting or rejecting its entire machine production.

Smith ..... Rozyskie ..... Brown ..... McCormick

Coldewey ..... McCarthy

TOP PAPERMAKERS DO SOME LISTENING . . . AND SOME TALKING. PULP & PAPER's camera captures Gaylord's CARLEY SMITH; prod. supt. ADAM ROZYSKIE, of I.P.'s Georgetown mill; SID BROWN, asst. to prod. mgr. at St. Joe Paper Co. and RAY MCCORMICK, gen. supt. of Owens-Illinois Jacksonville mill, during one of the talks. At right, St. Joe's vice pres. TOM COLDEWEY and CHARLES MCCARTHY, vice pres. of Southern Paperboard Corp., do some talking of their own after the meeting is over.

New Swedish Roller Guide Recommended for Nylon Belt

When a nylon belt is installed on a drive having the regular finger or palm shifter, it is sometimes necessary to install a roller guide to prevent damage to the edge of the nylon core. A Swedish roll guide known as the Guidler was strongly recommended for this purpose. Though originally designed for conveyor belts it has also found its way into the transmission field because of its merits.

The recommendation was made during a discussion of nylon core belting by Robert Fowler of Alexander Brothers, Worcester, Mass. Some other observations made by Mr. Fowler:

Chrome leather covering on nylon core belts affords better protection for the core than a fabric covering.

Belts should be properly engineered for the particular application. Like every other power transmission medium that is designed to carry the proper load it will give much longer life than if underbelted.

Very little maintenance is necessary with nylon core belting; they generally will run from three to five months without being cleaned or relubricated.

More About Uses For Gardner Dryer

Rice Barton Corp.'s H. B. (Whitey) Wilson of Savannah told how the new high velocity dryer invented by Thomas A. Gardner, Marathon Corp. engineer, is finding several uses to increase production on existing machines. On new machines, he said, this dryer built by Overly's Inc., Neenah, Wis., and sold, serviced and engineered for installations by Rice Barton, will eliminate more than half of the cylinder type dryers.

Chief component of the dryer is the nozzle arrangement. Nozzles, which are as long as the drying surface or sheet is wide, extend from a pressure chamber maintained at a fixed distance from the sheet. Nozzles are spaced closely together. They can be made to conform to any shape of surface whether curved or flat, and the pressure chamber can be made to fit into crowded machinery. An automatic retraction system is used for threading the web and for paper breaks. A single signal shuts down the fans; disconnects the ductwork and retracts the nozzle section from the surface. Two methods of control are available. Where direct fired gas is the source of heat, control is acquired by modulating the rate of combustion to maintain any desired temperature in the drying air. Current commercial combustion units have a regulating range of 10 to 1. In the case of steam heated units, better control can be maintained by throttling the air system, rather than varying the steam pressure. In certain instances, both are desirable.

Hair ..... Wilson ..... Jenkins

ELIMINATES HALF OF CYLINDER DRYERS on a new machine. Rice Barton's H. B. (WHITEY) WILSON discusses new R.B.-Gardner air dryer (built by Overly's) with Crossett's JIM HAIR and W. B. JENKINS.

Toughness: A New Concept of Future?

Another chapter in the story of Clupak paper was described by C. A. (Chig) Shoudy, asst. mgr. of West Virginia Pulp and Paper's Charleston, S.C., mill during one of the several full-house sessions at the Southern-Southeastern Supts. meeting in Chattanooga, Tenn.

But interest was also focused on Mr. Shoudy's comments concerning the specifications used to test bag paper. Suggesting that the present means for determining paper quality are outmoded and "have little correlation to bag performance," Mr. Shoudy predicted that "you will be hearing more about the concept of toughness in the future.

"We use a spec called CU-S-48C which, when analyzed, really has little relation to actual bag performance. Previously these specs were practical because we were unable to measure stretch accurately. But now we have instruments that can do an accurate job of measuring stretch, tensile and work. A new concept which correlates with bag performance is needed. We believe it should be toughness, which has long been used in Europe."

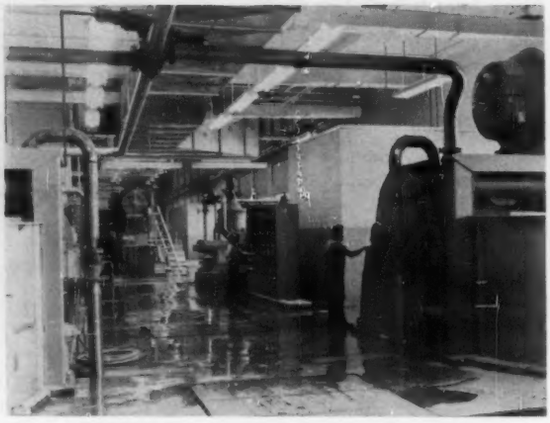
Mr. Shoudy explained "toughness" thus: Using the equation *Work* equals *force* times *distance* he substituted *toughness* for *work*, *tensile* for *force*, *stretch* for *distance*. In an ordinary stress-strain curve, then, the area under the tensile-stretch curve would be the toughness of the sheet. This, he said, gives a more accurate picture of the bag's performance.

He used the concept to illustrate Clupak's performing abilities. Although this paper does not have as much tensile strength as regular paper, it resists pull much longer and stretches a great deal more before rupturing.

West Virginia capped two years of experimentation last Dec. 26 at 10:20 p.m. when it made the first stretchable paper on its No. 3 machine at Charleston. "The backtender tried to tear a sheet off for basis weight tests," said Chig Shoudy. "When he finally had to cut the piece off with a knife, we knew we had it."

First report of this product appeared in March, 1958, PULP & PAPER, page 64, under the title: "A New Product: Stretchable Paper."

"SO SIMPLE IT'S AMAZING," said West Virginia's Chig Shoudy when describing how Clupak is made. Sheet runs between rubber belt (shown on model) and roll, giving it elasticity, toughness.



NEW ENGLAND'S FIRST SPECIALTY PAPER MILL IN 46 YEARS (airview left) is new Laurel mill of Hurlbut Paper Co. at South Lee, Mass. The last one was Strathmore's Woronoco, Mass. mill. (Right) Ultra-modern stock preparation equipment and instrumentation for No. 3 machine.

Special Mill—Special Paper

One answer to the question: How does small mill survive in big mill world? Hurlbut "worries about a single fiber"

—South Lee, Mass.

• High quality and extreme cleanliness standards plus rigid technical control are prime factors for Hurlbut Paper Co., 100% subsidiary of The Mead Corp. Hurlbut produces a wide range of special specialties where quality is the sole criterion. Its specialty products includes resin saturating papers for decorative and industrial laminates; filter papers; photographic papers and technical specialty grades ranging from 14 lb. to 240 lb. (24 by 36/500).

The manufacture of some of these products is so exact that it is said that Hurlbut "worries about a single fiber." Cleanliness is an obsession. All tile work is designed so that stock can not catch or hang up. Felt rolls are either chromium or nickel plated.

The Hurlbut organization in its long history (founded in 1806) has earned an outstanding reputation for producing these special specialties. Its intensive research facilities have pioneered not only in cellulose fibers but have made a tremendous impact upon the use of papers from synthetic fibers for such uses as plastic laminates, electrical insulation, filtration, heat insulation, industrial processing, etc. Hurlbut is now producing a number of papers made entirely of glass fibers, aluminum silicate, rayon and other synthetic fibers of an organic or inorganic nature.

$5 Million Investment

The new 50-tons-per-day mill represents an investment of $5 million, is designed for future expansion. The one-story red brick and aluminum building has 100,000 sq. ft. floor area, measures 202 ft. by 488 ft.

The new mill is called the Laurel Mill to distinguish it from the older Willow Mill, about one mile away.

Edward A. Sitzer is president of Hurlbut Paper Co.; Frank G. Brinster, executive vice-president; R. E. Sitzer, treasurer; J. M. Burt, secretary and sales manager; Engelbert Krichels, general superintendent; G. S. Serra, director of production planning, and Dr. Hans F. Arledter, director of research. Kenneth Bancroft is mill manager of the new Laurel mill and director of engineering for Hurlbut. Leon Tisdale is mill superintendent at Laurel and David Hellstrom is superintendent for Willow.

Design and engineering of the new mill was principally handled by Mr. Krichels and Mr. Bancroft.

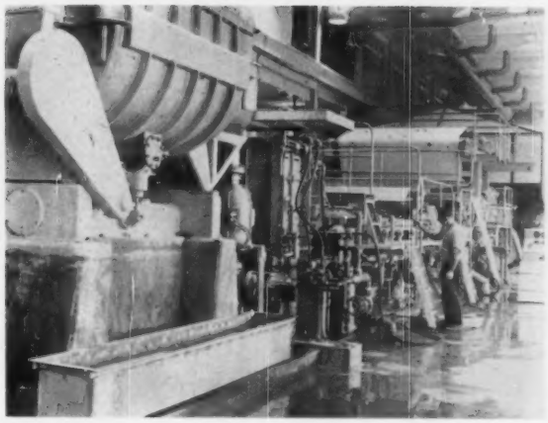
Two 2,000 lb. capacity Hi-Lo pulpers by E. D. Jones & Sons Co. are used for stock slushing and repulping

Edward A. Sitzer

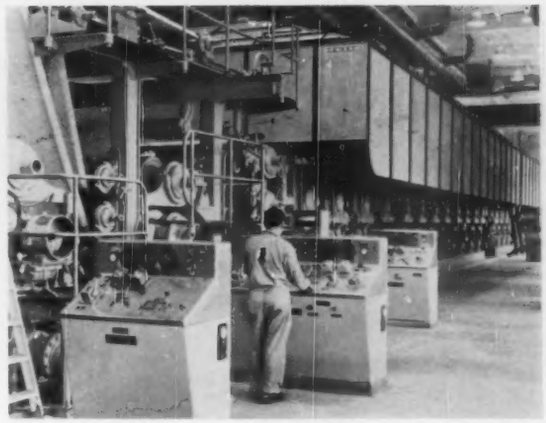
Make Glass Paper "Softer than Chamois"

President Ed A. Sitzer: "We have learned to make paper softer than chamois skin out of glass fibers and ceramic paper fibers that keep their insulating properties at searing temperatures."

Mr. Sitzer joined Hurlbut in 1934, became president in 1936. His question then, is often asked by others today: "What chance has small business in today's bigtime economy?" It was his unshakable conviction that the use of technical papers could be greatly expanded if a paper company could concentrate all its efforts on the development of new types of papers.



RICE BARTON NO. 3 MACHINE will increase Hurlbut's capacity by 125%, has a top speed of 600 fpm.



PRESS AND DRYER SECTION OF NO. 3. There are three press sections. Ross Engineering hood and air system.

of broke. Pulper loads are pumped to three 2,000 lb. capacity Jones beaters. An air-operated valve system permits diversion into selected stainless steel beaters. Beating cycles are controlled with automatic cam-type instruments.

Stock preparation includes two 18,000 gal. capacity tile beater chests, each with two horizontal agitators. From beater chests, stock is pumped through a DeZurik consistency regulator into Jones Royal jordans. From jordans, stock is passed to an 18,000 gal. tile machine chest. All stock chests were by Stebbins Manufacturing and Engineering Co.

A second DeZurik consistency regulator is between the machine stock chest and headbox stock line. Admission of stock to the paper machine is controlled by a Foxboro beta ray basis weight control system. Stock cleaning is by primary and secondary Nichols Vorjects.

Machine has Two Drive Shafts

The new paper machine has two E. D. Jones rotary screens in parallel. Four Foxboro magnetic flowmeters, with trim valve controls at each flowmeter location, deliver stock to the Rice Barton open gravity type headbox, all stainless steel. Wire is 120 in. wide and 61 ft. long. Breast roll diameter is 22-in. with a face of 126 in. The Sinclair dandy roll is driven by a Westinghouse dc motor with a conventional V-belt drive. The machine has conventional shake mechanism, oscillating flat boxes and a couch roll of 26 in. diameter by 122 in. face roll. There are three press sections with 24 in. diameter rolls, the first a suction press. Vacuum pumps are Nash; stock and water pumps are Warren.

There are 31 paper dryers, 48 in. diameter by 120 in. face, divided into four sections. There are eight felt dryers.

A four roll Appleton Machine Co. calender stack with 116 in. face rolls, follows. J. O. Ross Engineering supplied hood and complete air system with three economizer units.

The machine is driven by two drive shafts. The dry-end shaft is driven directly by a 239 hp Westinghouse turbine. An Allis-Chalmers Varidrive unit connects the wet-end drive shaft with the directly driven dry-end shaft.

The Rice Barton reel has a 36 in. drum with 44 in. roll diameter capacity. A 112 in. Langston two drum winder, rated at 2,000 maximum, follows.

Finishing room is spacious and well-lighted. Cleanliness is the highest aim.

The finishing room has a 1,000 fpm Langston rewinder identical with the machine winder. A 76-in. Clark-Aiken cutter, equipped with a split elevator table and a Stevens counter, and a Valley Iron Works roll header complete major finishing room equipment.

Electric Power is Purchased

The mill is supplied with 23,000 volt current, which is passed through a single three-phase transformer substation of 3,750 kva capacity, to reduce it to 2,300 volts. From the outside transformer substation the power is passed underground to the mill's main power vault; 2,300 volt current is used for all motors of 200 hp or larger rating. For smaller motors the mill has installed a double ender load center utilizing two 1,000 kva Pyranol filled transformers incorporating ten feeder breakers of 600 ampere capacity, each at 550 volts. All the equipment is General Electric.

The power room is adjacent to the beater room which permits all beater room starter equipment to be located in the power room away from the humid atmosphere of the stock preparation department. Motor controls for equipment other than those in stock preparation are motor control centers.

A 30,000 lb./hr. boiler by Babcock and Wilcox, 300 psi design pressure, operates at 260 psi and 485° F. It burns Bunker C fuel oil but can handle natural gas now being made available in the South Lee area. The mill generates steam for driving the turbine, paper drying and heating. A Cochrane feed water heater, Hungerford & Terry water softening, and Warren feed pumps are used. M. W. Kellogg built a radial brick chimney.

Process Water and White Water

All process water is drawn from the adjacent Housatonic River with two 1,050 gpm pumps and is chlorinated and treated with alum. The water passes through a 350,000 gal. sedimentation tank which results in a five-hour retention period, and gravity type sand filters. The Hungerford & Terry filtration plant has a present capacity of 1,500,000 gpd and a future capacity of 2,500,000.

The white water system is substantially closed and re-use is practically complete.

Instrumentation is Modern

Beckman pH control systems are in the water treatment plant and on the machine. The two Hi-Lo pulpers are equipped with instruments which make it possible to remotely control pulper filling with hot, cold or white water. Pulper dumping is also controlled remotely. The beater are cycle controlled with predetermined beating time control cams.

The machine has beta ray basis weight recording and Stickle moisture control at dryers.

YOU BET YOU ARE IN POWER BUSINESS if you have a mill comparable to this one—FIGURE 1, International Paper's Natchez, Miss., mill, served by three power boilers, five recovery boilers and three turbogenerators.

Industry Trend—More Power

In a decade, electrical requirements of large mills have jumped from 28,000 to 80,000 kw.

By T. J. (JACK) JUDGE*

Coordinator of Power Plants and Division Power Engineer, Southern Kraft Division, Mobile, Ala.

● During the past decade, the design of power plants in the pulp and paper industry has followed a trend toward higher steam pressure, higher voltage, much larger total capacity and larger individual items of equipment. This progressive trend has been brought about by the increase in size of individual paper mills, use of larger motors and electrical centers and demand for higher pressure steam for process. The industry has grown tremendously during the past 10 years, its growth exceeded only by the nonferrous metals industry. It now holds a position as fifth largest manufacturing industry in the United States.

Fig. 1 shows one of the most modern manufacturing plants of the pulp industry. This plant manufactures a very high-grade pulp product and uses large quantities of steam, electricity, and water which are produced as part of its operation. The first production unit for this mill was built in 1950 for a capacity of approximately 300 tons per day. Subsequent expansions have brought today's output to nearly three times that amount. The original power equipment consisted of the following:

Two 6000-kw turbine-generators (one single extracting noncondensing and one double extracting condensing).

Two 150,000 pph power and bark boilers.

Two 112,000 pph recovery boilers.

Initially, all steam was generated at 600 psig, 700 FTT. When the plant was later expanded, a 15,000-kw noncondensing extracting turbine with steam conditions of 1250 psig, 950 FTT inlet, 600 psig extracting and 60 psig exhaust, was installed along with a 300,000 pph gas-fired power boiler. All electrical power averaging 24,900 kw is produced with the flow

T. J. (JACK) JUDGE: "Whether they admit it or not, many executives of this industry are in the power business."

*This paper published with permission of the American Society of Mechanical Engineers and the sponsors of the ASME-AIEE Power Conference, held in Boston, Sept. 28-Oct. 1, 1958, where it was presented by Mr. Judge. ASME announced it was receiving discussion on this paper up to Nov. 3, 1958.

of steam to the process pressures, with only a minimum flow to the condenser under the 6000-kw extraction condensing unit.

Designing the Power Plants

One of the first problems in the design of a mill power plant is determining initial steam pressure. Once mill production figures are established, the average electrical and steam-consumption figures must be calculated. Table 1 was prepared to illustrate typical heat rates at different levels for initial steam pressure and various types of paper production. Actual studies for a particular mill would be more detailed and would cover a wider range of initial steam conditions. For one example worked up, it was found that an increase of 50° F in steam temperature, increased the amount of electricity produced from process steam by 4.5%.

After establishing design characteristics of equipment, a steam-flow diagram similar to that in Fig. 2 is prepared. Average quantities of steam flow and electrical output are included. This particular diagram covers a 47,500-kw plant, which has just been topped by a 20,000-kw noncondensing turbine.

After establishing the capacities of equipment, the various manufacturers are consulted on questions of delivery and erection. The equipment must be ready for operation on a schedule which corresponds with other mill equipment. The schedule has been a large factor in determining whether the high initial steam pressure and large-capacity units would be acceptable. The need of public utilities for equipment in large sizes and at high pressures has, during the past 10 years, overloaded the manufacturing facilities for large turbines and boilers. Their schedules extend delivery as much as three or four years after purchase. For the industrial purchaser, it was necessary to limit the capacities and pressures to that which could be manufactured in the 12 to 14 months required.

Pulp and Paper Power Plant Trends in 10 Years

1. Electrical requirements up from 28,000 to as high as 80,000 kw.
2. Capacity of individual generators from 7,500 to 40,000 kw.
3. Capacity of steam generating units from 200,000 to 500,000 lbs. per hr.
4. Electrical distribution for larger plants, up from 2,300 to 13,000 volts.
5. Initial steam pressure, properly selected to produce all electrical and mechanical power at heat rates as low as 4,100 Btu per kwhr or equivalent, has increased from a high of 850 psig, 750 F to 1450 psig, 1000 F.

A Recent Plant

For a recent power plant design (I.P.'s Pine Bluff, Ark., mill) a model was made to design equipment and piping layout (See cover picture). Fig. 3 is a sectional side elevation of the plant. This particular plant was designed for a multi-product mill producing newsprint and bleached board. The 60,000-kw generating capacity comes from one 20,000-kw noncondensing turbine with steam condition of 1250 psig, 950 FTT inlet, 400 psig extraction and 60 psig exhaust; and one 40,000-kw condensing unit, extracting at 160 psig.

The 400-psig extraction is used for an intermediate pressure system, which supplies steam to mechanical drive turbines having a total capacity of more than 20,000 hp.

The two power boilers, with a capacity of 450,000 lb per hr each, have cyclone burners suitable to burn combinations of fuels such as bark, coal, oil or natural gas. The other two boilers are chemical recovery units, which can burn approximately 50,000 pph of black liquor solids and produce approximately 212,000 pph of steam each. Other major equipment consists of three 1500-gpm boiler feed pumps, each driven by 2000-hp turbines at 4900 rpm; one 1,200,000 pph spray-type deaerating feedwater heater; and four closed feedwater

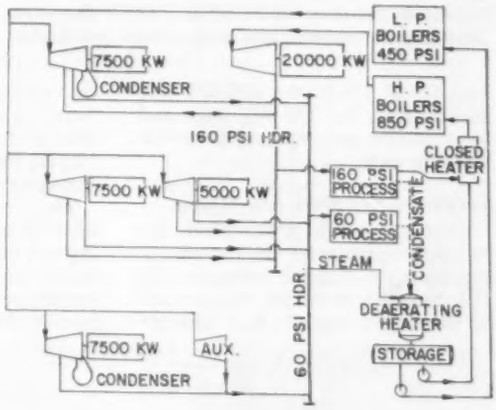


FIGURE 2 – STEAM-FLOW DIAGRAM for Springhill, La., power plant with 20,000 kw high pressure, non-condensing-turbine, topping a 47,500 kw power plant. This serves the International Paper Co. mill at that location.

TABLE 1–Typical Results of Design Studies For Various Types of Mills

PLANT CAPACITY – TONS/DAY TYPE PRODUCT	500 BLEACHED BOARD		800 KRAFT BOARD		350 NEWSPRINT			500 SEMI-CHEM. BOARD		
EXPECTED POWER CONSUMPTION (AVG.)										
KW LOAD	19,400		18,350		24,100			12,800		
60# STEAM, #/HR.	166,000		191,000		238,000			188,000		
160# STEAM, #/HR.	240,000		350,000		35,000			50,000		
INITIAL STEAM CONDITION (PSIG/°FTT)	400/675	850/825	400/675	850/825	600/750	850/825	1450/1000	400/675	850/825	1250/950
AUXILIARIES, M#/HR.	75	63	136	128	165	154	112	98	28	21
REDUCING STATION, M#/HR.	0	0	0	0	0	0	0	0	0	44
CONDENSER STEAM, M#/HR.	127	1	129.5	9	142	89.5	9	92.5	18	5
TOTAL STEAM GENERATED, (M#/HR.)	533	407	670.5	550	413	380.5	280	330.5	256	243
PREDICTED – BTU/KWH	10,580	4,020	11,100	4,160	9,700	7,450	4,050	11,300	5,190	4,680

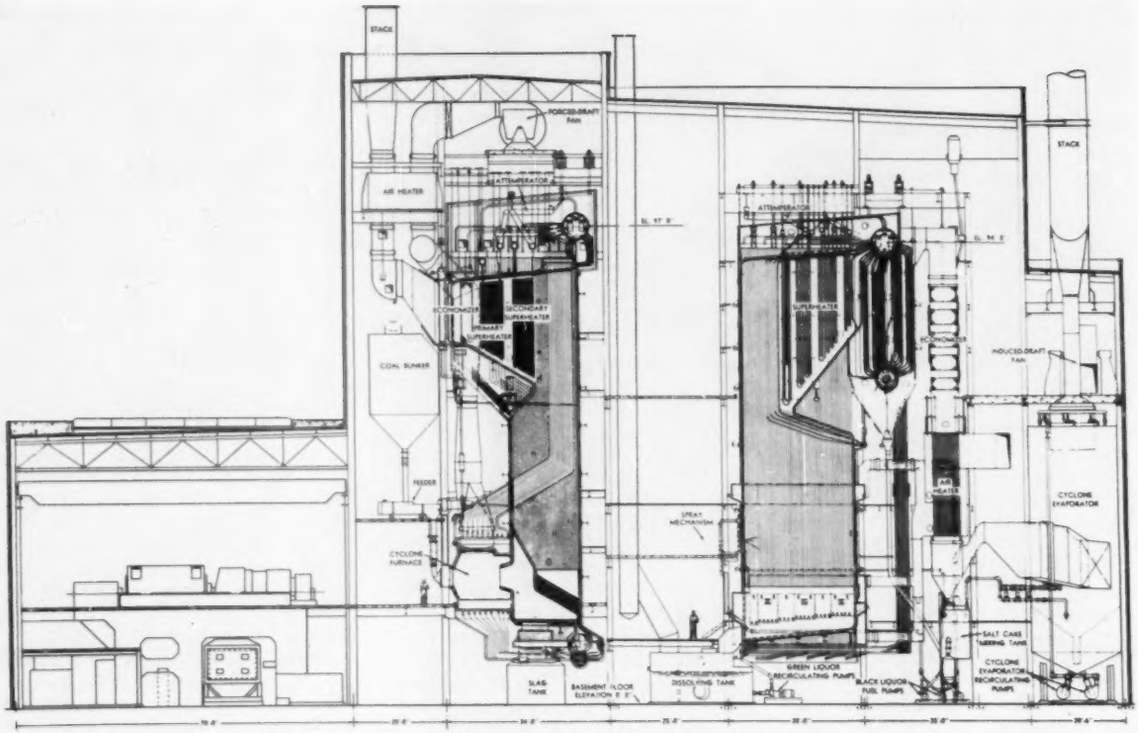


FIGURE 3–CROSS SECTION OF PINE BLUFF 60,000 KW POWER PLANT with two General Electric turbine-generators and four Babcock & Wilcox boilers, two for combination fuel power and two for chemical recovery (Cover picture on this issue of PULP & PAPER shows model of Pine Bluff power plant). Recovery units (1250 psig, 900 FTT) have highest pressure and temperature practicable at this time, says Mr. Judge.

heaters, of which two 600,000 pph operate from the 175-psig stage and two 600,000 pph operate from the 400-psig stage.

Turbine Generators Are Bigger

In a paper mill power plant, the turbo-generator must be capable of performing a dual job automatically. It is required to reduce the pressure of steam and regulate that pressure for varying flows caused by the manufacturing process, while at the same time produce all of the electricity for varying loads and maintain a constant frequency.

Fig. 4 is a cutaway section of a 40,000-kw single extraction condensing unit recently installed. It produces 32,000 kw at the extreme steam-flow conditions of either: (a) Maximum extraction flow with a minimum to exhaust; or (b) zero extraction and maximum flow to condenser. The full load of 40,000 kw can be made with varying combinations of steam flow while satisfactorily holding constant pressure at the extraction stage and controlling electrical frequency for the system.

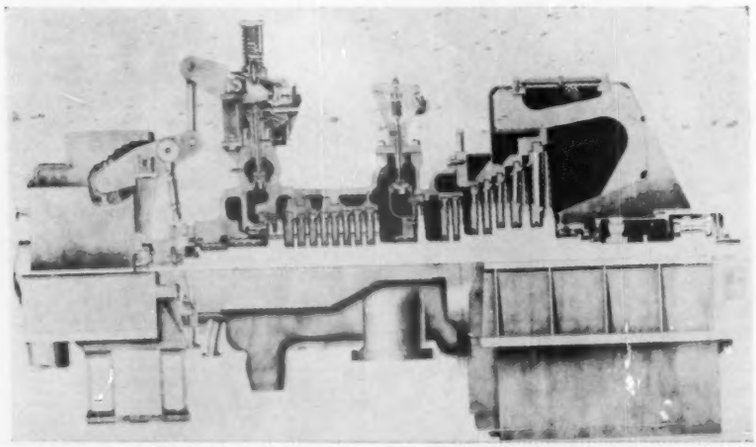


FIGURE 4–CUTAWAY VIEW OF 40,000 KW CONDENSING TURBINE (single extraction) installed at I.P.'s new Pine Bluff, Ark. mill and greatly expanded Mobile, Ala., mill.

This turbine unit functions similar to two individual turbines connected on one shaft, such as a noncondensing unit which exhausts into a condensing unit. As the steam flow at the extracting stage changes, affecting the load output on the higher pressure unit, the flow through the low-pressure unit to condenser automatically changes and shifts load output from one to the other without affecting the total of the two. If total load on generator changes, then flow to condenser automatically changes to hold a constant frequency.

Many improvements have been made in turbine generators during the past 10 years. Design features that affect application to paper mills such as efficiency, governing, extraction pressure control, vibration and ease of operation have contributed greatly to the successful trend of paper-mill power plants. These features have been covered in many technical papers, some of which are listed in the

bibliography[1, 2].

Steam Generators

Since a large proportion of mill steam is produced by waste-heat fuels, the specifications for the steam-generating equipment must thoroughly evaluate this condition. The two most prevalent waste fuels are: (a) Black liquor, which is burned in a furnace to recover the chemicals as well as the heat, and (b) bark and wood waste that must be disposed of by burning.

Earlier bark-burning boilers were constructed with a dutch-oven-type furnace attached to the conventional steam-generating unit. Bark is fed into a hopper over inclined stationary grates and it moves by gravity, while burning, to the dump grates at the lower end. There was a need for units of larger capacity that would give continuous steam output at maximum rating and would also allow reduction in operating labor.

A modern spreader stoker has a traveling grate designed specifically to burn bark singularly or combined with pulverized coal or oil. The bark is sized to 2 in. maximum by shredding. It is injected into the furnace through feeders located in the front wall. Proper distribution is obtained by varying the blast or air under the feeder. Part of the combustion air enters the furnace through the numerous side wall nozzles to create turbulent mixing of the gases while the balance enters under the grate to provide cooling and to complete combustion of unburned particles falling on the grate with the ash.

New Units Burn Combinations

In recent years, there has been a tendency to discontinue using the classification of bark-burning boilers. Many of the recently installed units burn combinations of bark, oil, coal and natural gas and have sufficient capacity to run the entire plant. A boiler of this capability is usually classified as a power boiler. The cyclone-furnace boiler shown in Fig. 3 produces 450,000 pph steam on either coal, oil or natural gas, combined with bark up to ratios (measured by Btu) of one part bark to two parts purchased fuel. Bark is also burned in combination with pulverized coal, oil or natural gas over spreader stokers or small stationary dump grates. Recent designs of these have been covered in many publications and technical papers[3-5].

The power boilers must have adequate capacity to supply that additional quantity of steam not produced from waste heat. Its furnace and burners are designed for the most suitable commercial fuel. For the earlier mills, the maximum size was usually in the range of 150,000 pph and only in rare instances were steam pressures as high as 850 psi and 750 FTT. Climaxing the trend toward larger units, many multifuel units have been installed for capacities of 450,000 and 500,000 pph with steam pressure and temperature as high as 1450 psig, 1000 FTT.

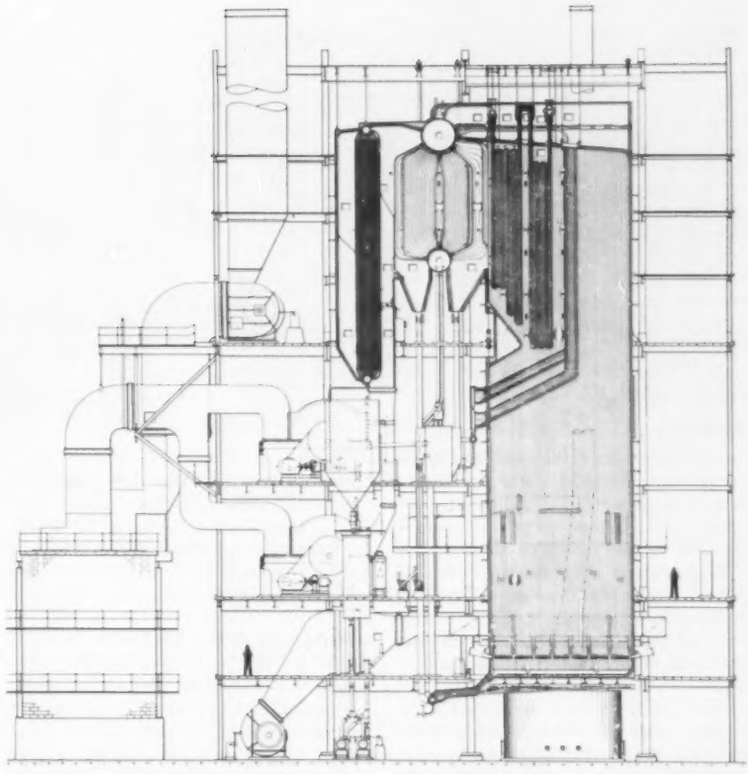


FIGURE 5—WORLD'S LARGEST RECOVERY BOILER at Longview Fibre Co., Longview, Wash. This is a Combustion Engineering Inc. boiler with six times the capacity of the first unit built 20 years ago.

Two cyclone-fired boilers, similar to those shown in Fig. 3, have been operating for more than 20 months in one paper mill. During that period, coal, bark, oil, and natural gas, in various combinations, have been burned. Also, lignite and petroleum coke are being considered and probably will be tried. The many design features of this particular type boiler and its history of operation have been covered in many technical publications, some listed in the bibliography[5, 6].

Design of Recovery Boilers

The recovery boiler is the only unit of power plant equipment that is specifically designed for pulp and paper mills. History of the present-day design dates back to 1937, when boiler manufacturers anticipated a good future for a furnace to burn black liquor and efficiently recover the chemicals and heat. The earlier units ranged in steam capacities of 55,000 to 110,000 pph with maximum steam pressure and temperature around 400 psig, 700 FTT. Fuel-burning capacities were in the range of 16,000 to 32,000 pph of black liquor solids.

Biggest Recovery Boiler

Fig. 5 shows a section of a recent recovery installation and some of the various equipment involved at Longview Fibre Co. This particular unit, the largest in the world, has a capacity more than six times that of the first unit built 20 years ago. It can produce 316,000 lb. of steam and burns 83,000 lb. of black liquor solids per hour. In the power plant of Fig. 3, the two recovery units were designed for 1250 psig, 900 FTT, which is the highest steam pressure and temperature practicable at the present time.

It is the nature of the black-liquor fuel that adds to the complications in design and operation of recovery boilers. It is a highly viscous liquid, containing wood lignin and spent chemicals washed from the cooked

pulp and concentrated by multiple effect evaporation to approximately 50% solids and 50% water.

There are only two boiler manufacturers in this country who build recovery boilers. During the early development, it was questionable whether profit from sales would pay for the development cost. The success of its application, however, is evidenced by the fact that during the 20 years, 278 units have been sold capable of producing a total of 28,000,000 pph of steam per hr and consuming a total of 8,000,000 pph of black liquor solids. A partial list of recent technical publications is included in the bibliography[7-9].

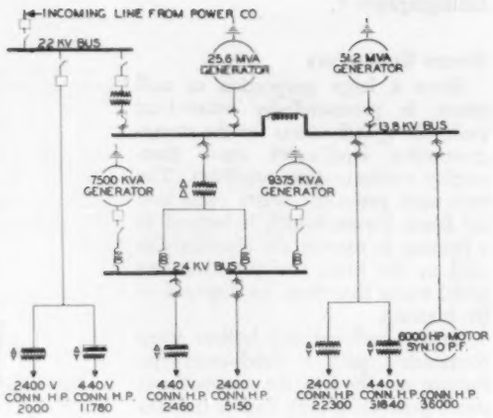

14-INCOMING LINE FROM POWER CO
22 KV BUS
25.6 MVA GENERATOR
54.2 MVA GENERATOR
13.8 KV BUS
7500 KVA GENERATOR
9375 KVA GENERATOR
2.4 KV BUS
6000 HP MOTOR SYN 10 P.F.
2400 V CONN. H.P. 2000
440 V CONN. H.P. 11780
440 V CONN. H.P. 2460
2400 V CONN. H.P. 5150
2400 V CONN. H.P. 22300
440 V CONN. H.P. 31840
CONN. H.P. 36000

FIGURE 6—ELECTRICAL DISTRIBUTION SYSTEM for load of 93,500 kw at International Paper Co., Mobile, Ala.

Electrical Distribution System

The single-line diagram in Fig. 6 covers the electrical distribution system of a paper mill having a power plant of 81,000 kw generating capacity and utility tie-in of 12,500 kw. This particular diagram was selected for illustration because of the plant's historical background, the several voltages now used and the low-capacity connection with a large public-utility system.

This plant was designed and built in 1929 by the Public Utility with only a single 6000-kw generating unit. The turbine, a noncondensing unit, reduces steam pressure from 400 psig inlet to 150 psig and 60 psig at extraction points, and 5 psig exhaust. The electrical energy produced was fed into the utility system's 22,000-volt overhead line for distribution throughout the mill.

The second turbine, a 7500-kw double-extracting condensing unit, was installed in 1946, after the plant was purchased by the paper company. Some of the mill load was then distributed at 2300 volts. Recently, with a large addition to the paper mill, the 20,000-kw and 40,000-kw units were added. Their generator voltage was 13,000, thus, the system was again rearranged.

The six 6000-hp grinder motors were supplied at 13,000-volts through individual switches located in the powerhouse, a distance of approximately 1000 ft., and single-conductor cables installed on overhead cable racks. Other system motors were supplied from the 13,000-volt bus through single-conductor cables on overhead racks and voltage reduced to 2300 or 440 at the load. At the same time, additional load was added to the 22,000-volt overhead line.

The utility system tie-in was continued in use with a load controller regulating load swings. The controller was designed to operate the speed-changer motor of the 40,000-kw turbine so it would take the plant load swings. Although the utility load chart may show a few large instantaneous swings on the system, the average demand is held very close to the predetermined setting.

Water Treating and Boiler Feed

It is very important to have suitable treatment of the boiler-water make-up, since most mill power plants have only 40 to 60% of the condensate returned. A typical paper mill water-treating plant is equipped to demineralize water for boiler make-up. Demineralized water is popularly used in the high-pressure boilers of mills, as well as in those of other industrial plants using a high make-up. Although demineralization plants have a high construction and operating cost, the use of their water has contributed extensively to reducing the cost of boiler downtime, boiler cleaning, repairs to condensate system and internal treatment of boilers[11, 12].

In addition to boiler-water treatment, large quantities of water are also treated for use in the mill process. Untreated well water was used for many years but with the demand for bleached papers, high-quality water is now used in many mills. Most mills use the high-rate vertical-flow flocculators without filters but a few use gravity-flow sand filters after treatment. There is very little difference in the various types of equipment used and the methods of treatment. The most commonly used treating chemicals are lime, alum, and occasionally chlorine.

Fig. 7 shows a modern water-treating plant designed to remove iron from ground water and demineralize boiler water. The control room and laboratory are located in the building over an open-sided pump room. The two rectangular flocculators, to the left of the water-treating plant building, have a total capacity of 32,000 gpm. The boiler-water demineralization plant to the right, consists of three pressurized cation exchangers, three degasifiers, and three gravity flow anion exchangers. It has a total capacity of 1800 gpm.

Boiler-Feed-Pump Uses Change

Most plants drive the boiler feed pumps by steam turbines at speeds around 3600 rpm. However, in recent years, by going to higher speeds, the pumps are made smaller and the combined efficiency of turbine and pump unit is much higher. Some of the recent installations have speeds as high as 6500 rpm[13].

In some older power plants, the change to demineralized water had a disastrous effect on the life of pump casings. Where possible, it was necessary to add caustic to raise the pH, but in some plants the boiler feedwater was used for desuperheating, making use of caustic objectionable. For those situations, it was necessary to install pumps with chrome-alloy casings capable of handling the pure water.

Deaerating heaters have had very few design changes. However, there has been a gradual trend toward using the spray-type deaerator instead of the tray-type. The most beneficial improvement made is the installation of a large storage between deaerating heater and boiler feed pump. By using a wide-range level controller, the surges in make-up flow to the deaerating heater could be evened out to benefit the condensate-return system and obtain better deaeration.

Internal treatment of boiler water is naturally more difficult with the higher-pressure boilers. At pressures up to 1250 psig, however, little difficulty is expected, if water is demineralized. A few cases of internal corrosion, caused by iron-oxide scale, have been reported. The iron oxide

FIGURE 7–INTERNATIONAL PAPER CO'S PINE BLUFF, ARK., WATER-TREATING PLANT has capacity of 27,000 gpm for mill supply and 1,800 gpm for boiler feedwater.

originates in the large process condensate systems, particularly during shutdown periods, and enters the boilers with the returned condensate to form the damaging scale. Amines have been used in an effort to reduce iron oxide but for those cases tested, the improved results would not pay for the treatment cost. Boilers having iron-oxide scale are successfully cleaned with acid. There is, however, a need for a definite method of determining frequency of such cleanings or determining when internal conditions are such that boiler should be cleaned to prevent damage.

Machine Drives for Over 4,000 Hp.

Mechanical drive turbines are used widely in paper mills to drive paper machines and to drive such power plant auxiliaries as boiler feed pumps, boiler fans, and special emergency equipment. With higher paper machine speeds, more horsepower is required to drive it, and some of the recent drives installed were for more than 4000 hp. Also, some of the recent power-plant auxiliary drives ranged in capacities of 800 to 2000 hp.

One of the main requirements of a turbine to drive a modern high speed paper machine is its ability to regulate the speed accurately over a wide range. A turbine that is designed to operate over a speed range of 10-to-1 or more, will perform well at top speeds but, at low speed, it has an exceptionally low torque capability and a very sluggish response to governor demand. Also, the force of the governor is low and usually has insufficient power to overcome minor friction and minor mechanical difficulties in the governing system.

On a recent installation at Pine Bluff, Ark. two turbines were used to cover the wide speed range. The equipment arrangement, speed ratios and steam flows are illustrated in Fig. 8. With the smaller turbine operating during the lower paper machine speeds, the savings in steam consumption alone will justify the additional installation cost, without considering all of the operating advantages obtained by better speed control.

Auxiliary Turbines for Drives

The types of auxiliary turbines used to drive pumps and fans can be compared in these categories:

1. Units with multivalve steam inlet and oil-operated governor.
2. Units with single-valve steam inlet and oil-operated governor.
3. Units with single-valve steam inlet and mechanical governor.

For drives of approximately 1200 hp or more, it is usually necessary to use the multivalve design. Three units of 2000 hp each were installed recently to drive boiler feed pumps. The purchase cost of the multivalve unit is considerably higher than the single valve, somewhere in the range of $35,000 to $40,000, as compared to $12,000 to $15,000. The cost difference is very hard to justify and whenever possible, the single-valve design is selected.

The oil-operated single-valve unit is generally suitable for loads ranging from 500 to 1200 hp. It is the large quantity of steam flow for these sizes that makes it preferable to use the oil-operated control valve. For applications not requiring wide speed range or special governing, the mechanically operated control valve is usually satisfactory for sizes under 500 hp.

There is a definite need to restudy and re-evaluate the governor and control valve of auxiliary turbines. For so many of the papermill applications, the control valve is tied in with special systems. For example, the turbine driving a boiler fan must be regulated to suit the air requirements. In order to get good regulation, the supplier for boiler controls must furnish a regulating valve to be installed ahead of the turbine. Likewise, many of the boiler-feed-pump drives are controlled by separate valves in the steam line because of troubles experienced when attempting to regulate pump pressure through the governor control valve.

Trends in Future Design

The future trend in pulp and paper mill power plant design will be affected by potential alterations in the manufacturing process. Changes that could be expected include new uses for products now consumed in making waste-heat steam; new or revised process methods; manufacture of special raw materials; added conversion of paper products, and load required to operate by-product plants. The application of large power equipment within the mill, as well as in the power plant, can be expected. The cost of fuel and sources of fuel energy also will be involved.

Wood bark that is presently burned as fuel contains many chemicals which may be recovered economically some day. There is also the possibility of finding a good commercial use for bark in its present state. The black liquor also contains valuable chemicals, other than those presently recovered, and by finding an economical process to separate these chemicals, operation of present power plants and design of new ones would

be affected.

With the cost of petroleum fuel having more than doubled in recent years, many plants are converting to coal. But many of the boilers installed during the past 10 years were designed specifically for natural gas or oil and it is not economically convenient to change to coal. With the possibility of restricting the use of natural gas for industrial boilers, all future designs should be easily convertible to coal.

We can expect the usual periodical changes in equipment design and equipment construction with a continuing trend towards larger units, larger capacity plants and possibly higher steam pressure. A few turbine-generator units up to 60,000 kw capacity will be used, while the power-boiler capacities should reach 750,000 lb per hr. A few of the plants will have a total capacity of around 120,000 kw and 2,000,000 lb of steam per hour.

The possible application of gas turbines in the pulp and paper industry is limited. The best potential use at present is in older plants with low-pressure boilers. The exhaust from gas turbines can be used as combustion air to obtain a very good heat rate. The future of gas turbines in a pulp or paper mill will depend largely upon total installation cost and the availability of suitable fuels. The installation and operating cost of a plant with gas turbines and low-pressure boilers must compare favorably with noncondensing turbines and high-pressure boilers[14].

How Problems are Solved

Specific problems of design or operation of mill power plants are very interesting but no attempt has been made to cover any specific event. Most oprators have a very definite conception of the type equipment needed and are inclined to insist on flexibility, extra capacity and ease of operation without too much regard for construction cost and over-all efficiency. The designer must carefully study each problem and work out the most economical and practical solution that will fit the operating conditions.

As an example of such problems, the plant illustrated by flow sheet, Fig. 2, can be used. When the addition of the 20,000-kw turbine and high-pressure boilers was proposed, the turbine unit was designed for a 400-psig extraction stage. With variations in 160 psi steam at exhaust, the extraction stage would help to maintain the generator output.

All studies indicated that the normal variation in 160-psi steam used in the process would have too much effect on a straight noncondensing turbine. It was then decided to convert the 160-psi extraction stage of the 7500-kw double-extraction condensing unit to combination induction-extraction. The 20,000-kw unit could then carry full load with surplus exhaust steam inducted to the 160-psi stage of the 7500-kw unit.

The revised system is not as flexible as the original but it is entirely suitable for all reasonable variations in operating conditions. With the revised design, the average electrical output of the generator is 5% higher and the estimated saving in construction cost is $150,000. This difference in performance and installation cost was sufficient to get the project approved.

Many executives in this industry will tell you they are in the business of producing pulp and paper and not power. However, with the average size kraft mill in the South operating 65,000 hp in electrical motors and 12,000 hp in mechanical-drive turbines, from a power plant having a capacity of approximately 35,000 kw of electricity and 1,000,000 lb of steam per hour, whether they admit it or not, they are in the power business.

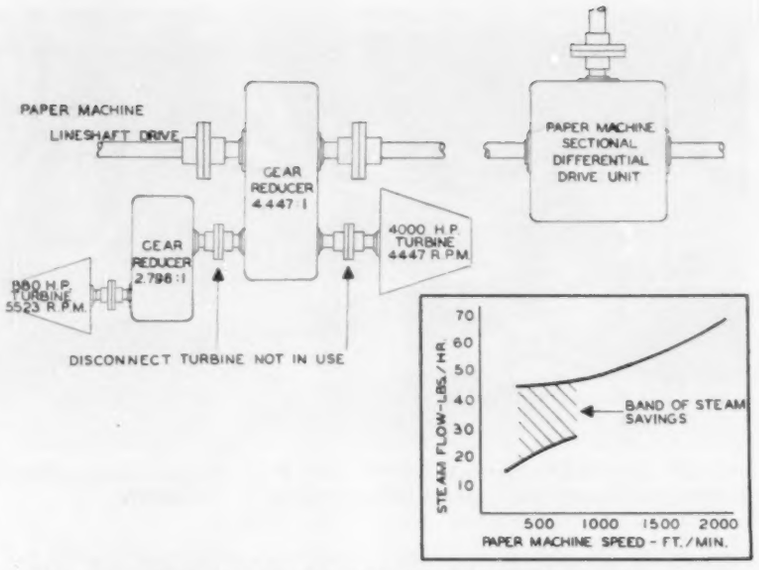


FIGURE 8–PAPER MACHINE DRIVE WITH DUAL TURBINES for new 450-ton per day bleached board machine at I.P.'s Pine Bluff, Ark., mill. (one of two machines in that new mill).

Acknowledgment–Contributions made by various equipment manufacturers and members of International Paper Co.'s Engineering Dept. are gratefully acknowledged and deeply appreciated.

REFERENCES

[1]"Economics of Higher Pressures and Temperatures for Steam Turbines in Industrial Plants," by M. M. Patterson, E. V. Pollard, and W. B. Wilson, American Power Conference, Chicago, Mar. 27-29, 1957.

[2]"Turbine Governors for Paper Mill Power Plants Simplify Control of Mill Power and Heat Balance," by W. B. Wilson and G. H. Gibb, TAPPI Engineering Conference, Cincinnati, Sept. 24, 1957.

[3]"Design and Operation of Furnaces for Burning Bark and Wood," by W. H. D. Clark; Pulp and Paper Magazine of Canada, Technical Section Proceedings, 1953 issue, pp. 196-203.

[4]"Suspension Burning of Bark Refuse," by R. Ellwanger, TAPPI, vol. 35, Mar. 1952, pp. 108-111.

[5]"Multi-Fuel Firing of Cyclone Furnaces," by G. A. Watts and W. L. Sage, ASME, Cleveland, June 17-21, 1956. (ASME Paper No. 56-SA-56)

[6]"Small and Medium Size Cyclone Furnace Boilers," by W. I. Collins, ASME-AIME Fuels Conference, Pittsburgh, Oct. 28, 29, 1954. (ASME Paper No. 54-FU-3)

[7]"Chemical Recovery Unit," by V. P. Owens; Paper Trade J., vol. 135, No. 20, Nov. 14, 1952.

[8]"Chemical and Heat Recovery with the Venturi Scrubber at Thilmany," by P. H. West, TAPPI, vol. 38, July 1955, pp. 399-402.

[9]"The Burning of Sulfate, Soda and Sulfite Waste Liquors," by E. H. Kennedy, Combustion Engineering Inc., Nov. 1954.

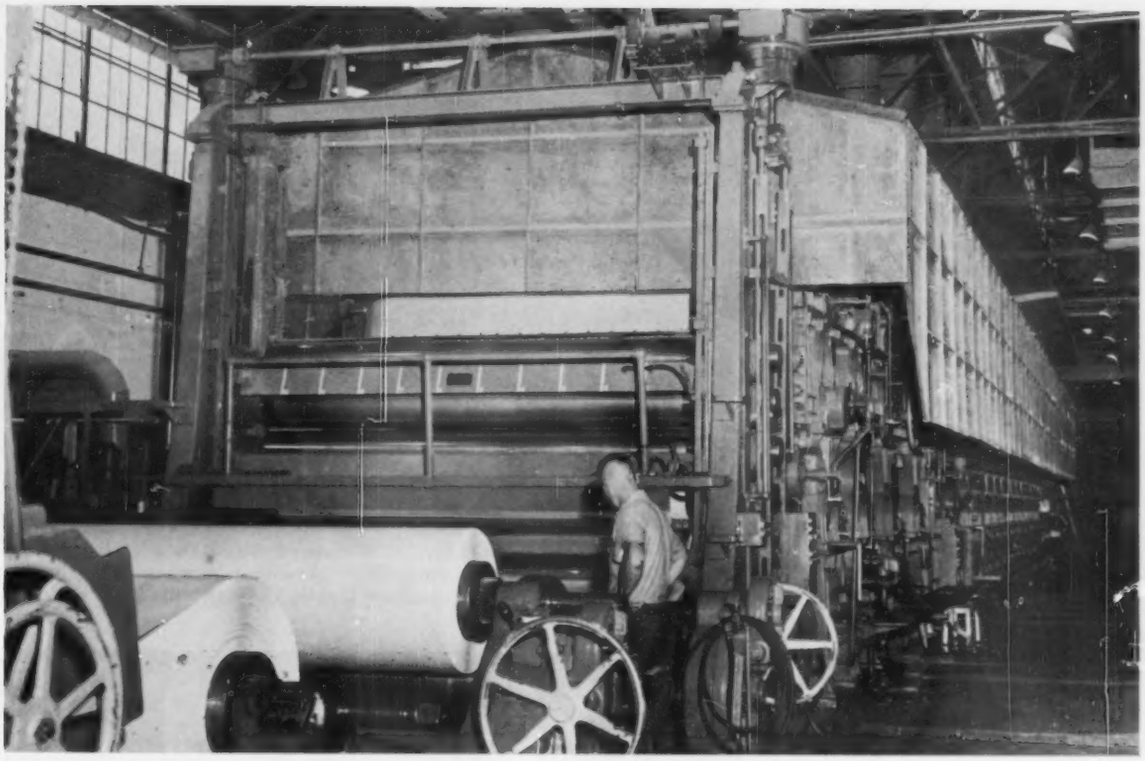
[10]"The Expansion of Power Distribution Systems in Paper Mills," by H. B. Greear, TAPPI, Mar. 1956.

[11]"Demineralization of Boiler Feed Makeup for Paper Mills," by T. J. Judge and C. L. Davis, Jr., Proceedings, American Power Conference, 1955.

[12]"Demineralization Equipment Solves Boiler Feed Makeup Water Problems," by J. D. Yoder, Southern Power and Industry, vol. 71, Oct. 1953.

[13]"High Speed Boiler Feed Pumps Meet New Needs," by I. J. Karrasik, Power Engineering, Oct. 1956.

[14]"Industrial Application for Combined Gas Turbine-Steam Turbine Plants," by W. B. Wilson, American Power Conference, Chicago, March 28, 29, 1957.



HOOD TRANSMITS LIGHT, DOESN'T CORRODE . . . Modernized No. 2 machine at Columbia River Paper Mills, lengthened 27 ft. by adding size press and second dryer section, has hood built of Owens-Corning Fiberglas by Corrosion Controllers, Inc.

Product Line and Volume Extended

. . . by (1) Fiberglas hood; (2) Scotch tape on drying roll, and (3) horizontal size press in Columbia River Mills

—Vancouver, Wash.

● Columbia River Paper Mills No. 2 machine, a Black-Clawson Fourdrinier unit using 136-in. wire, has been rebuilt increasing output by 25%, or more, and extending the line of paper products produced. The modernization-expansion project involved extensive modification at the drying end and improvements at the wet end.

The dryer section was converted from a single to 2-section dryer; five dryer rolls, 8 felt dryers and a horizontal size press were added, the dryer sections equipped with Ross-Grewin hot air system, and the entire drying section equipped with a unique hood and vent system. Two additional Westinghouse dc electric drives—one for the size press and the other for second dryer section—were installed as a part of the project.

The former paper dryer section, which consisted of twenty-eight 48-in. diameter rolls, was converted to a 24-roll first section.

A horizontal size press, designed by Plant Engineer Virgil Peters and assembled in the mill shop, was installed immediately after the first dryer section. This press unit consists of two rolls (24-in. diameter by 134-in. long) built and covered by Huntington Rubber Co. The first is rubber covered, the other Microrok. Both ride on SKF anti-friction bearings mounted on a frame built by Salem Iron Works. Two air cylinders, specially made by Western Machinery Corp. for this application, hold the rolls together under 18,000 lb. pressure. These cylinders are mounted inside the press frame and connect with the lead roll.

Starch Delivery to Size Press

Pipes immediately above the press deliver a starch solution to middle of the rolls. This flows out along the rolls, above the nip on both sides of the sheet, the excess discharging at the ends into narrow frame-mounted stainless steel vats for return to the bulk size tank.

Mr. Peters reports that a roll change on the new horizontal size press can be made in 20 min. as against the two to four hrs. required for changing rolls on vertical size presses in the plant's two other machines. The unenclosed construction, leaving the press area open for convenient access and clean-up, provides additional advantages.

A second dryer section, consisting of five new rolls (four 48-in. diameter cast iron by Sandy Hill, one 36-in.

diameter steel roll built by American Pipe) and the four removed from the old dryer section, was installed behind the size press.

The sheet, upon leaving the size press, is drawn smooth over a Mt. Hope Vari-Bow roll enroute to first dryer of the second section, a 36-in. diameter steel dryer.

Three M's Tape Used on Dryer

To prevent size from adhering to the surface, this dryer is faced with .003-in. thick Teflon—a tough, low-friction, high-temperature resistent tape produced by Minnesota Mining & Manufacturing Co. Teflon, backed with pressure-sensitive adhesive, is spirally applied to the roll in 3-in. width, each turn overlapping approximately ⅛-in. at the edge. According to Ray Murray, paper mill supt. of the Vancouver plant, the $250 cost of tape for protecting the roll surface against picking up foreign matter is considered an economical investment in that it eliminates roll sanding and associated shut-downs. As result of the performance of this Teflon-covered roll, he plans similar applications to first dryers behind the size presses of the mill's No. 1 and 3 machines. It takes approximately an hour to cover a roll with the tape and a single application is expected to last a year.

Unusual Fiberglas Hood

The expanded dryer section, now 27 ft. longer than previously, is equipped with a new hood built of molded Fiberglas. Said to be the first such machine hood built, it was produced in lightweight sections by Corrosion Controllers, Inc., a new Camas firm custom manufacturing glass fiber enclosures of various sort for the industry.

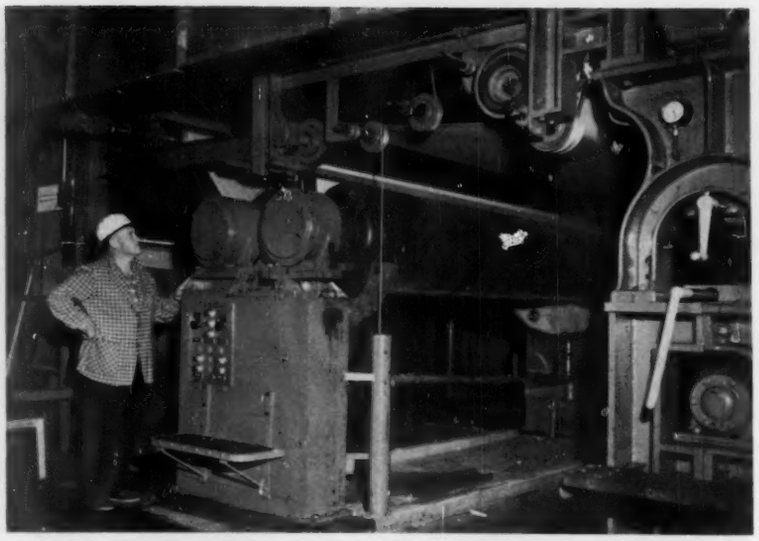
This 105 ft. long hood has 7 ft. drop-curtain sides built in light, removable sections weighing around 10 to 12 lbs. each. The panels are made of Owens-Corning Fiberglas cloth and matting which are shaped-formed in molds, treated with catalyzed thermosetting resins and then cured.

A fan-equipped 48-in. diameter Fiberglas pipe was installed to exhaust moisture laden air from the finish end of the hood. Vents formerly used on the old hood handle exhaust for the portion of the Fiberglas hood serving the first dryer section.

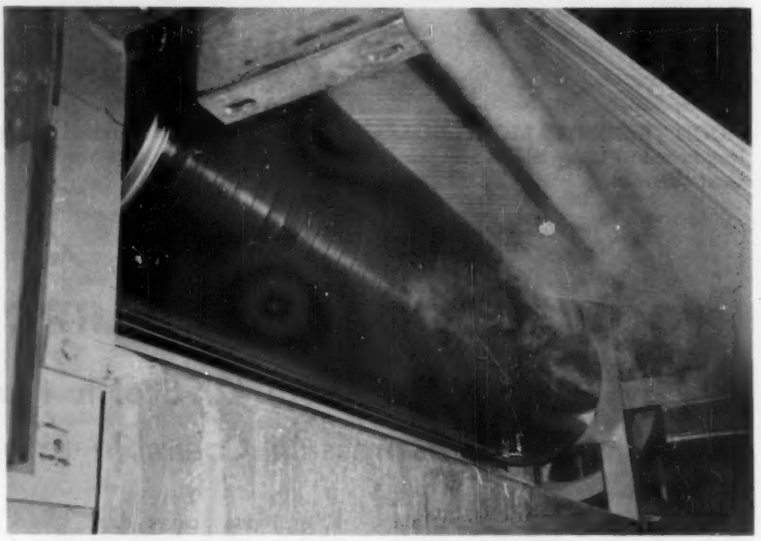
The new hood provides "much better ventilation," it's not subject to corrosion, is strong (workmen may walk on top of it); it has clean, smooth surfaces which readily transmits light, and is expected to maintain present usefulness many years. Because of the light-transmission factor, installation of extensive auxiliary illumination was not needed to obtain good lighting in both dryer sections covered by the hood. The steel framework supporting panels is protected from corrosion by clear resin coating such as was used to cover the glass fibers.

The two-fold objective in this modernization, Mr. Murray states, was to extend the machine's product line and increase production capacity. With the size press, a greater diversification has been achieved and smoother, stronger papers are produced. Where production formerly ran 25 tons on sub-9, it is now around 35 tons; the previous 700 fpm speed for a 10 basis tissue has been upped to around 1,000 fpm.

Selecting molded Fiberglas as the material from which to make the new hood was influenced by results obtained from other such installations. Among these are a hatch-covering over a molten sulfur tank—which has lasted seven months on a job where 16 gauge stainless steel developed pin holes in two weeks, Mr. Peters says—and an 18-in. diameter by 40-ft. high vent stack for the sulfur burner.



IMPROVES PAPER QUALITY . . . Horizontal size press, inspected by VIRGIL PETERS, plant engr. who designed component, enlarges machine's product range. Open construction aids changing Huntington-built rolls in 20 min.



NO STICKING HERE . . . Tough 3-M Teflon tape by 3M Co. spirally wrapped around first drying roll of second section keeps sizing from adhering. Newly installed Mt. Hope Vari-Bow roll (top right) smooths sheet enroute from 2nd size roll to dryer.

ROBERT G. BELKNAP, new general chairman, Pulp and Paper Division, National Safety Council.

PACIFIC COAST ASSN. OF PULP AND PAPER MFRS. was one of 14 winners of the National Safety Council's association awards this year. GLENN B. SANBERG (left), exec. v.p. American Society of Association Executives, presents the award to S. W. GRIMES, managing director, of the Coast association.

Pulp & Paper Div., Safety Council Moves to Standardize Accident Reporting

An important step, assured of a hearty welcome in many pulp and paper mills, was taken at the Pulp and Paper Division sessions of the annual National Safety Congress in Chicago in late October. Tentative agreement was reached on a plan to work out a standard reporting form that will be acceptable in all the various safety competitions in which mills are invited to participate.

"We at least got the plan off the ground and it should greatly simplify as well as standardize present reporting methods," said one of the division leaders. In different national and regional contests, a variety of forms, breakdowns, departmental queries, etc., have not only puzzled mill managements and safety departments but often have discouraged participation of mills in safety contests.

The mammoth Safety Congress drew an attendance of about 13,000, of which over 200 were registered for the Pulp and Paper Division meetings. Robert G. Belknap, personnel mgr., Bemis Bro. Bag Co., East Pepperell, Mass., advanced to general chairman of the division. He was succeeded as vice chairman and program chairman for 1959 by George Merriman, safety coordinator, International Paper Co., Southern Kraft Division, Mobile, Ala.

Goodrich of Strathmore Honored

The National Council's distinguished service award (only three or four are awarded each year) went to a pulp and paper industry man this year—Harley Goodrich, maintenance engineer, Strathmore Paper Co., West Springfield, Mass. Mr. Goodrich is a past general chairman of the Pulp and Paper Section and was a leader in devising the recently adopted Pulp and Paper Industry Safety Code, endorsed by both APPA and American Standards Assn.

One of the Safety Council's 14 association awards went this year to the Pacific Coast Assn. of Pulp and Paper Mfrs. The Pacific Coast group and the APPA are the only paper industry groups to have won this. It is a repeat win for the Coast group, a difficult achievement, according to sponsors, because it means "they have to add notably to their activities and to further reduce accident frequency rates" in order to repeat. In 1957 the Coast group of 44 mills reduced injury frequency by 15% from 1956 and 36% in the 5-year period, 1953-1957.

Celotex and Oconto Falls Win

Celotex Corp. and its Marrero, La., Los Angeles and Avery, O., mills (1,960,000 lbs. daily capacity) won the annual Arthur Hoyt Scott safety award for 1957, donated by Scott Paper Co. This is for an entire company with multiple operations (not including subsidiaries with separate safety organizations) which has the best safety record in this industry on the basis of Council records.

Falls Paper & Power Co., Oconto Falls, Wis., a wholly owned subsidiary of Scott Paper Co. (G. L. Heath, vice pres. and plant mgr.) was winner for 1957 of the Edward Benton Fritz award. This goes to the highest individual pulp-paper mill in the Council's Division 1 of this industry, which also submits additional required reports to qualify for this award.

Red Cedar Kraft Success Dependent on Cost

Improved kraft pulp utilization of Western red cedar is primarily dependent on cedar wood costs being low enough to compensate for the yield and production penalties with this wood, according to Dr. James D. Wethern, coordinator of products, Crown Zellerbach Corp., Camas, Wash.

Dr. Wethern was one of the speakers at a regional meeting in Vancouver, B.C., of the Forest Products Research Society.

Basing his remarks on research and practical experience of Crown Zellerbach Corp. and Crown Zellerbach Canada, Dr. Wethern said the low density of cedar is the most serious handicap to increased use in pulping. Stringy bark is a problem.

A bright spot, he said, is that kraft pulp from cedar does have some quality advantages over competing softwoods. Compared to hemlock kraft, the pulp from cedar has as high or higher bursting strength and tensile strength (breaking length) properties which are critical in many grades. In addition, it has a smaller fiber diameter than hemlock which results in good paper formation or uniformity.

"Western red cedar is pulpable by either the kraft or sulfite process, but yields too dark a groundwood to have any possibility for groundwood production. Kraft pulp yields and digester productive capacity with cedar are lower than for competitive woods. Increased corrosion is another disadvantage. Cedar kraft pulp, however, does have superior properties for many uses," he said.

Bolton Book Now Available

Copies of the 1958 Eleventh Bolton Award Book, being distributed containing the ten prize-winning essays on "How I Can Help Relations Between My Company and My Community" will be sent to interested persons upon request. Write John W. Bolton & Sons, Inc., Lawrence, Mass.

Machine Improves Shaping of Jordan and Beater Bars

A specially designed, heavy duty carbide milling machine which makes it possible to shape jordan plug and beater roll bars from flat stock solid alloy steel has been installed by E. D. Jones & Sons Co., Pittsfield, Mass. Custom made by the Sundstrand Machine Tool Co., Rockford, Ill., the machine shapes bars with greater accuracy and at lower cost than was formerly possible.

ABLAZE UNDER NIGHT LIGHTS, Hudson works around clock to make 500 tons of unbleached kraft papers per day. And now, to this, is added 80 tons of tissue per day.

Special Report on Hudson Tissue

Many usual features of this pioneering mill in South are told for the first time. Engineering and research united in success

—Palatka, Fla.

● During World War II, one branch of the Armed Forces captured America's imagination when it tacked a sign on a wall which read: "The difficult we do immediately; the impossible takes a little longer." Actually there was nothing new about the message. American research labs had been performing "impossible" miracles for years.

At Palatka, Fla., just such a story came to a climax with its most recent mill expansion. Hudson Pulp & Paper Co. research laboratories, under Vice Pres. Raymond S. Hatch, had successfully developed a process for making tissue paper from Southern kraft. Based directly on the success of this research project, a $15.5 million tissue mill is turning out 80 tons of tissue a day here. Hudson's mill is new from the woodyard (see Pulpwood Section) to railhead, an impressive addition to the kraft mill built here in 1947. While it has been running several months, there are many features about which information has never been published.

Basically, the story of the mill boils down to a simple thesis: "How could Hudson get the best possible quality and keep costs at a minimum?" Rae Mills, chief engineer, answered.

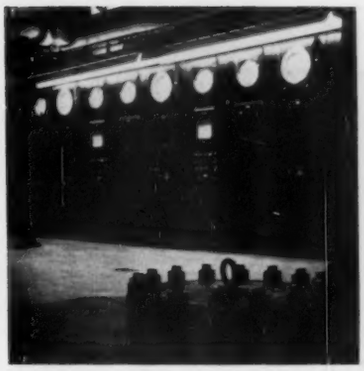
"We were running at capacity with everything we had when the tissue mill was conceived," he said. "So we started from scratch at the woodyard. We needed a new turbine, boiler, water supply, bark burner and, of course, a tissue mill. The kraft mill was originally designed in 1947 so we could double its capacity by adding a second unit. By 1951 we'd started up a second kraft unit. Departments up to and including the digester room were added on to existing facilities. Everything else was built new from the ground up. To do it, we depended on three things: What we knew; what our engineers, J. E. Sirrine Co., knew; and what the suppliers recommended when we were both stymied."

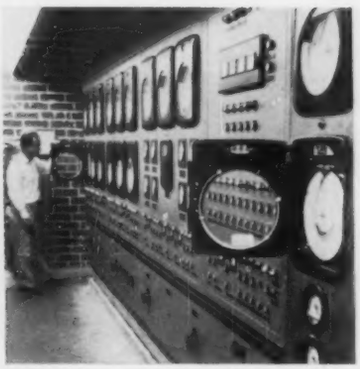
Top Company Executives

Jacob Mazer, board chairman of Hudson P&P; William Mazer, president; Samuel A. Lopin, secretary; Joseph Mazer, treasurer; A. Zuckerman, v.p. and assistant to the president; Raymond S. Hatch, J. B. Mendelsohn, Samuel Siegel, A. W. Aron and D. B. Kuhe, vice presidents. Mr. Kuhe, formerly with the Crossett Company, is vice president in charge of manufacturing, and Mr. Hatch is the veteran research director, and both of them had important roles in the new tissue development.

Some of Tissue Mill Features As Told In PULP & PAPER's Own Story and Pictures

1. **Automation for safety, quality and cost reduction**
2. **But no expense was spared to prevent corrosion**
3. **Bleach plant has new designs, also chlorine dioxide**
4. **Pre-heater on dryer is called a good investment**
5. **Stock feed system to Fourdrinier machine is unique**
6. **Yankee dryer is one of largest in the world**
7. **Smooth flow carries through finishing and converting**





AUTOMATIC AND REMOTE CONTROLS are used extensively throughout mill. Left, digester control station which keeps finger on all digester activities. Right, Foxboro control system in bleach plant. Open window in foreground is instrument tied to gamma ray chlorine dioxide feeder.

Automation—Extensive Controls

Automatic controls at Hudson were used for three specific reasons: Safety; to insure a uniform, high quality pulp; to reduce costs through manpower savings. Central control panels were installed at all major stations throughout the mill, completely controlling entire processes like washing, cooking, bleaching, conveying, drying, etc.

In the digester room, for instance, automatic controls are used to control liquor feed, refilling digesters, weighing chips, measuring condensate, cooking, gas-off, etc. The bleach plant, too, is provided with "every instrument we know how to use and some we had to learn about."

Controls also direct liquor measuring, wet and dry broke level, blow tank consistency control, blending chest control, stock and dump chest levels, main washing, refining and jordans. There are seven different control stations alone on the big 228-in. tissue machine.

Pulp Mill

Chips are delivered automatically via Stephens-Adamson conveyor from three 204-ton Stebbins bins. A Merrick weightometer clocks off the weight of chips enroute to the fourth floor where they are dumped into one of four new Chicago Bridge, 12 by 44 ft. digesters. The digesters are equipped with Fibre Making Processes circulation, indirect heating and blow tank recovery system.

"There's nothing too unusual about our brown stock treatment but we were never coy about piping. No expense was spared to prevent corrosion problems."—Rae Mills.

Because of increased processing temperatures and pressures and the use of usually severe corrosive solutions, cast stainless components and piping are used extensively through the mill. Control valves, heat exchangers, agitators, mixers, pumps, even fittings are made of high alloy stainless, expected to greatly improve the life of these parts and improve replacement costs.

Piping, too, was treated with care. Stainless steel was used wherever corrosive waters had to be contended with. Steam pipes are magnesium covered with aluminum foil and tarpaper. Outside tanks are all protected against weather and other elements by Earl Mastic paints.

Brown stock is washed on the fourth floor of the new tissue mill in an open room which also contains the bleaching system. The Impco brown stock line includes a knotter and three single stage washers—capacity: 200 tons a day.

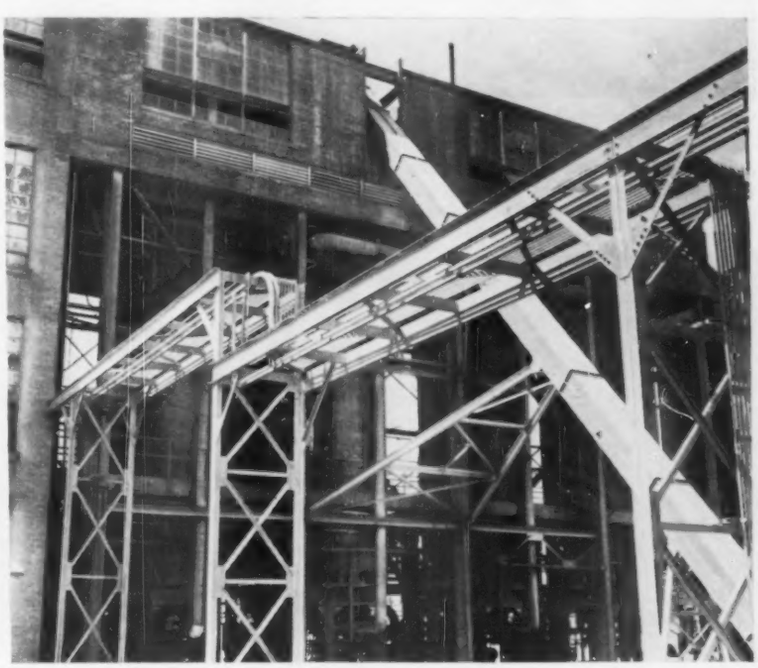
The stock is screened directly below the washer on the third floor through four screens, three primaries, one tailing. Bristol-controlled Trimbey consistency regulators maintain the right density and a 200-ton Oliver decker thickens stock for delivery to the bleach system.

Chlorine Dioxide Bleach Plant

Sharing one large room on the fourth floor with the brown stock washing line, Hudson's bleach system was provided with special totally enclosed hoods over the washers by the Bahnson Co. of Greensboro, N.C. Stainless steel, as previously pointed out, is used extensively.

Stainless double shaft mixers precede each tower. Caustic and hypo are both conventional downflow type tanks but the chlorine dioxide tank is a new, high density upflow design. Pulp and ClO_2 are mixed at the bottom of the tank by a radial flow mixer. All parts contacted by the bleach mixture are Hastelloy C steel.

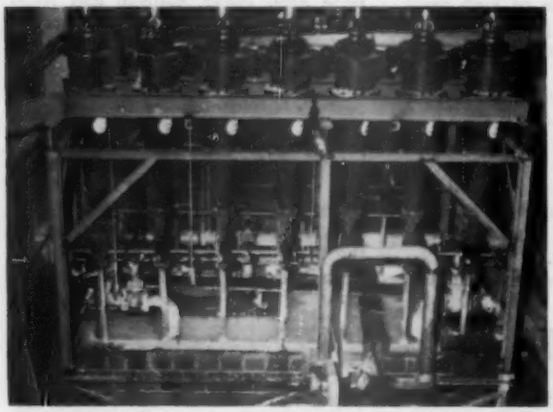
A specially designed screw is driven by a Westinghouse Life Line motor with Link-Belt silent chain drive on the third stage washer. The screw is reversible and permits semi-bleached

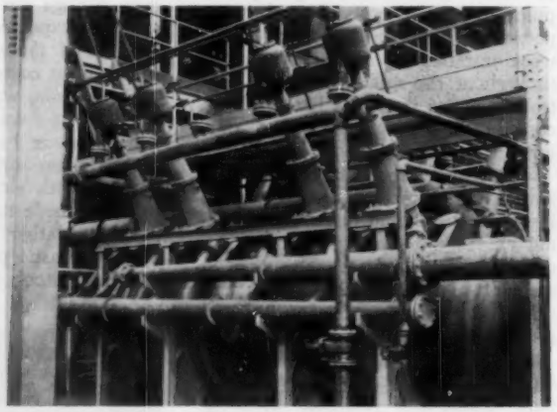


LONG CONVEYOR DELIVERS CHIPS to four new 12 by 44 ft. Chicago Bridge digesters, shown in background. Operating floor at top is enclosed.

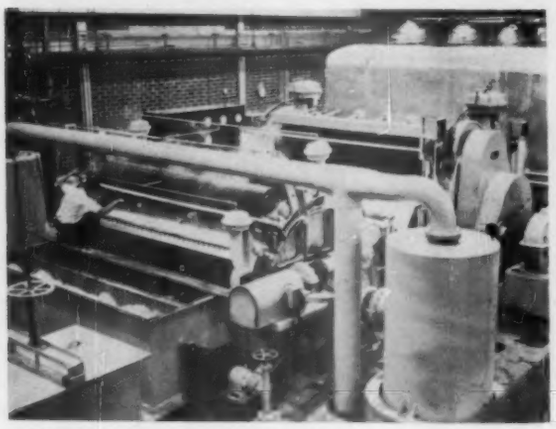
HUDSON PALATKA

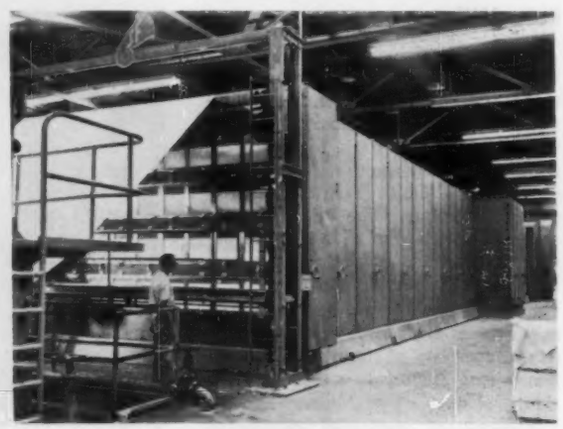
SOMETHING NEW IN BLEACHING. Chlorine dioxide for the bleach system is fed by gamma ray radial feeder (left) into an upflow tank. ClO_2 and pulp are pumped into bottom of tank, flow upward to washers. Four stage bleach system (right) by Kamyr is also new to South, features specially designed totally enclosed hood.





TISSUE PULP GETS THE WORKS when it comes to cleaning. At left, 13 Bauer cleaners ten (650 gpm, three 500 gpm) are used ahead of pulp dryer. Right, eight more Bauer cleaners are mounted on Deculator, which air-cleans the water ahead of the machine. A secondary and tertiary cleaner working after Deculator gives the pulp its final bath before it goes into the machine and becomes tissue paper.





PULP IS DRIED HERE. Slush pulp is fed through Impco feltless wet end, then passes through American preheater (left). Pulp sheet makes nine passes through Flakt dryer (right).

stock to be pumped straight from this stage to a semi-bleached stock chest when necessary. The four bleach washers are driven by G.E. motors through Falk reducing gears.

A Word About Dirt: *"One big thing we were concerned about was a clean sheet. This is a thing we really feel we've accomplished. Some folks fight dirt all the time. We took a great deal of care setting up our cleaning system and it's money well spent. We haven't had a dirt problem since we started."*—Rae Mills.

Where Pulp is Dried:

"The preheater on this dryer is a splendid idea. Heat is taken off the dryer and circulated through the preheater. This affects heat economy and we've found it a worthwhile investment."—Rae Mills.

From the bleach plant, the pulp goes through Bauer cleaners ahead of the pulp dryer.

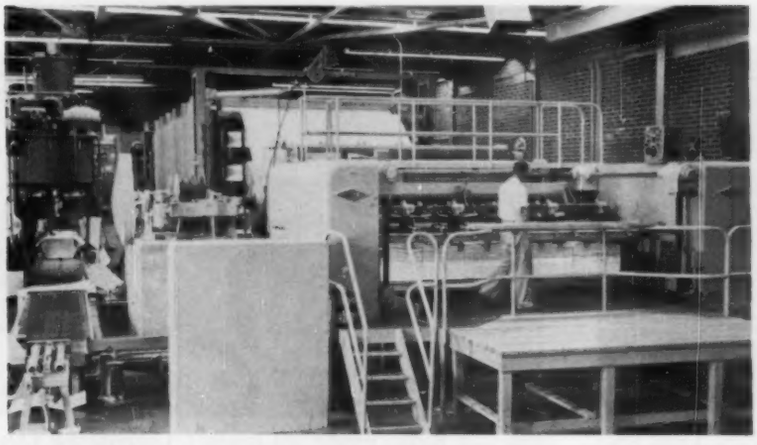
"We're really proud of this cleaning system," said Mr. Mills. "The Bauer cleaners ahead of the pulp dryer give us a good, clean furnish."

From the cleaners, pulp is delivered to a 136 in. Impco headbox and from there to a feltless Impco vacuum wet press which forms a pulp sheet for treatment in the American SF preheater. No live steam is necessary in the preheater, which employs hot air from the dryer. This method of preheating the pulp sheet substitutes the former method of running the sheet over steam cylinder dryers between the first and second presses. The preheating method permits air and steam contact to the wet sheet between the two. In the preheater, the pulp sheet makes several vertical passes before going through the second wet press and into the dryer.

ONE OF HUDSON'S SECRETS is drying all pulp and repulping it for blending before feeding it to tissue machine. Pulp is repulped in Jones-Liebeck disintegrator. Conveyor into pulper is push-button controlled; one man can operate it.

An American SF Flakt dryer, 108 ft. long, with Westinghouse multimotor drive and dancer rheostat control, dries the pulp. The steam coils are in tiers for smooth, even, circulation of steam for drying and the sheet makes nine, dryer-long passes through the unit. The dryer has 13½ ft. doors for easy access and 14 ft. wide windows in front for ease in threading the sheet with the aid of an electric hoist. Chain conveyors carry the pulp sheet through the dryer and preheated air is circulated by six fans.

It is interesting to note how Hudson has set up its pulp drying room so that there is an even, continuous materials flow from the cleaners straight through to baled pulp delivery. The pulp moves in a straight line from cleaners through a Lamb-Grays Harbor cutter and layboy, which has full automatic control. After the dried pulp is cut and stacked, it is reversed on the conveyor 180 degrees and flows back alongside the dryer. It is baled in a 600-ton Baldwin-Lima-Hamilton pulp press, tied by Autowire Twistlock machine and delivered to the floor below by a Lamb-Grays Harbor lowerator.



PULP FLOW. Lamb-Grays Harbor cutter slices pulp into sheets before it moves by conveyor (left) and then straight back through baler, automatic binder and into lowerator for trip to floor below (right).

Dried Pulp is Repulped

An E. D. Jones Liebeck disintegrator with a 12 ft. inside height has a rubber covered shaft which operates two bronze props for repulping. The dried pulp is delivered into the open pit pulper on a push-button controlled conveyor controlled by one man who cuts the wires off the bales.

A Jones Hi-Lo pulper, which has two independent rotors, one for stock circulation and initial breakup at low speeds, the other for clearing stock at high speeds, is located near the Yankee dryer. It is 304 stainless and is hand-fed from both the machine and finishing rooms which is adjacent. Broke from the Hi-Lo is pumped back to the furnish at a uniform rate. If the amount of dry broke gets excessive, pulp used in the furnish is controlled by simply varying the amount of dry pulp being fed into the disintegrator. Stebbins tile chests are used throughout, for broke storage, blending, and slush.

HUDSON PALATKA

The Paper Machine

The stock feed to the machine is patented. A unique design, it eliminates the conventional style throttle on the main line and also reduces the danger of turbulence. Speed and flow of the master fan pump are pre-set and automatic controls maintain a very close tolerance. This new stock system avoids the danger of flocculation. The possibility of stagnation is also eliminated.

The Rice Barton machine has a 226 in. wire. It is full cantilever, permitting wire changes without removing the entire Fourdrinier. The wet end is designed for speeds up to 2500 fpm. It has a Rice Barton pressure headbox.

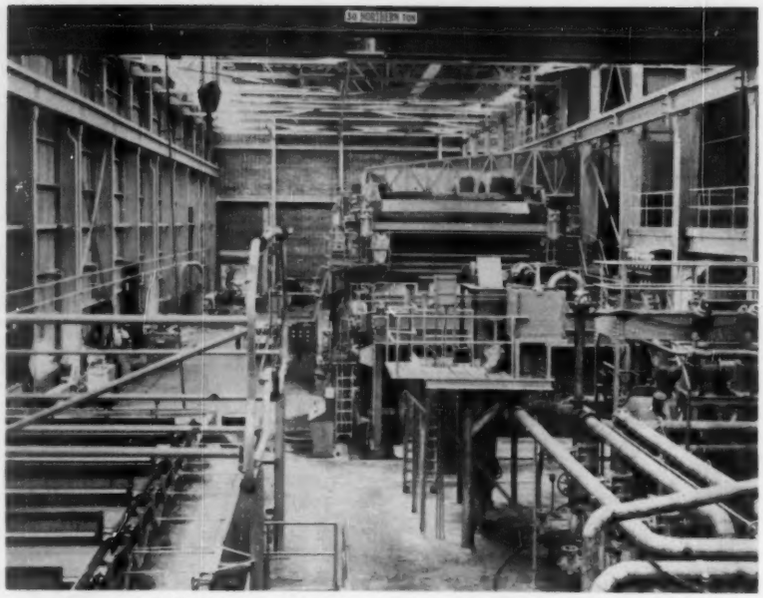
A cloverleaf press takes the sheet from the pickup felt and transports it to the Yankee dryer, believed to be one of the largest in the world. It is 12 ft. in diameter, 19 ft. wide. Weight: nearly 50 tons. Tissue goes on to the Yankee at a pressure of 400 lbs. per lineal in.

A Lodding doctor removes the sheet from the Yankee and it passes through a pneumatically operated horizontal Rice Barton reel which winds up a 60 in. roll. An automatic sheet transfer permits operators to change rolls at maximum speeds.

The entire machine is run by a General Electric sectional electric drive with a speed range from 100 to 2500 fpm. It is controlled by amplidyne circuits. The draw is adjusted to the nth degree by fingertip controls. Console type control stations along the front of the machine permit constant, convenient operations.

A continuous circulation oil system filters, cools and dehumidifies the oil before it is recirculated into the machine and a Norgren Micro-Fog lubrication system delivers oil to the parts in the form of a fine mist for premium operation.

Throughout the mill many Elliott Co. motors are used ranging from 7½ to 400 hp. They drive all sorts of pumps, agitators, conveyors, fans, etc.

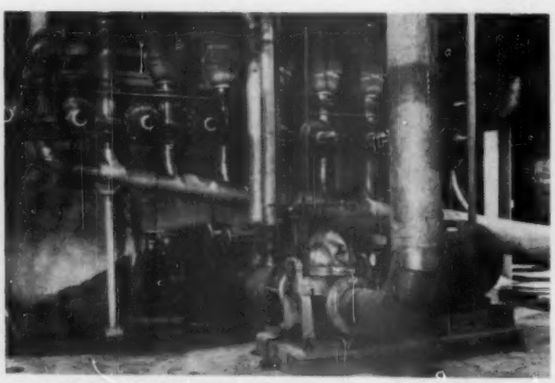


STRAIGHT DOWN THE LINE through P&P's wide angle lens into tissue machine room with simple straight-line flow. Jordans, refiners and deculator at right; then Rice Barton Fourdrinier followed by Yankee dryer, rewinder and finishing room behind brick wall at rear. At left is new double-disc inlet valve Sveen Pedersen saveall for reclaiming fibers, clarifying white water. Overhead crane services entire room including dye mixers (directly under camera).

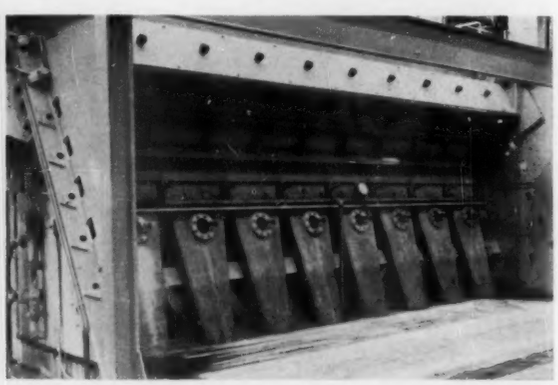
Finishing—Converting

From the machine, the creped sheet goes through a Cameron two-surface unwinder which handles two 60-in. rolls simultaneously, rewinding them into lesser two-ply rolls. The two-ply sheet then passes through two pairs of calender draw rolls and a size 21 Cameron slitter, where it is reduced to widths and diameters suitable for converting at speeds up to 4000 fpm. Then the roll is ejected onto a hydraulic table and is lowered to the floor for transfer to the converting department directly ahead.

A Sveen-Pedersen saveall utilizing the latest innovations for floating fibers to the surface on minute air bubbles is used for fiber recovery and white water clarification. The saveall has the latest double-disc inlet valves and



HOW UNIQUE STOCK FEED WORKS. Pulp goes from 12,500 gpm Warren fan pump through Deculator then back to seven Foxboro magnetic flowmeters (left) which control flow through seven tapered manifolds (right)



into Rice Barton pressurized headbox. Conventional style throttle on main line and massive air-drome type headbox are eliminated; dangers of stagnation and turbulence are also eliminated.

a capacity of 1200 gpm.

Smooth flow of materials, one of the secrets to the layout of this new tissue mill, is carried right through the finishing department. The converting plant starts where the producing department ends, a straight line right on through to the boxing of tissue.

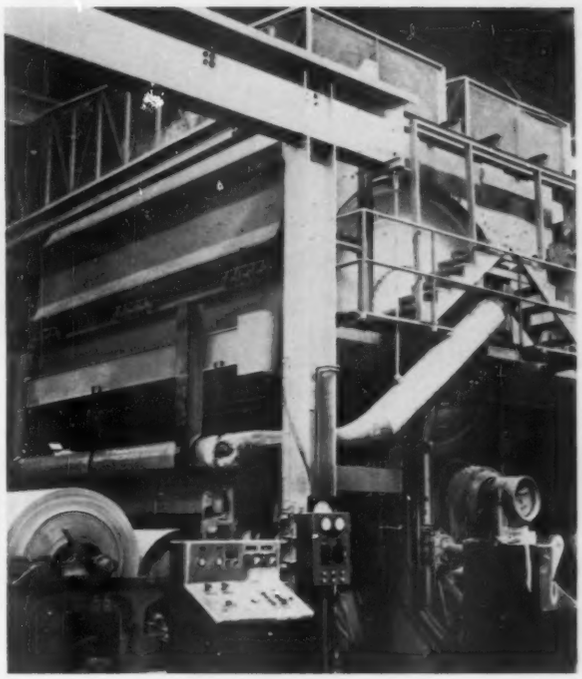
Converting Plant

This is a maze of carefully laid-out floor level and overhead conveyors. Facial tissues, hankies and toilet tissues are all sent across this conveying "highway" to a centrally located position where cartons are glued automatically.

Facial tissue is finished on a Teall folder which feeds directly to a saw where the tissue is sliced to right length. A Jones cartoner tucks the tissues into boxes at the rate of 2000 a minute and they are then boxed for shipping in standard kraft packers.

Toilet tissue is handled on a series of machines. The finished toilet tissue is then delivered to the cartoner on a Mathews conveyor equipped with ball transfer tables which divide the line of rolls first into two lines, then four for faster action at the carton table.

The interconnecting series of conveyors, which travel the length and width of the converting department, delivers all cartons to the automatic gluer, which seals the boxes as they travel toward the spiral conveyor to the ground level shipping.



YANKEE IS ONE OF BIGGEST. Tremendous 12-ft. Rice Barton Yankee dryer.

Steam, Recovery, Water

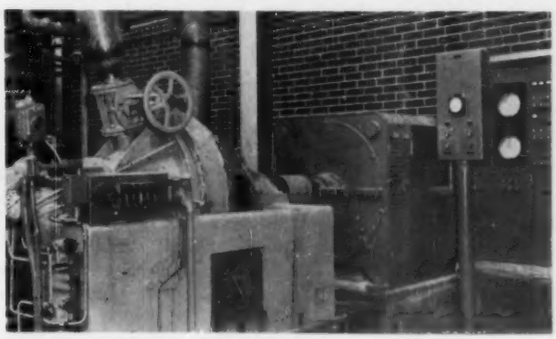
Backing up the major expansion at Hudson are new power and recovery units. These include a 6000 kw Westinghouse automatic extraction turbine generator, a six-effect, six-body Swenson evaporator, and a Babcock & Wilcox 250-ton recovery boiler, added to two other recovery units. A new 10-ton conveyor system with a Roots-Connersville blower was installed for unloading salt cake and the recovery system was further bolstered by a new Traylor lime kiln with a Venturi scrubber.

Water for the mill is treated for clarification and color removal in a 15 million gals./day treatment plant. Boiler feed water is treated in three 6 ft. resin zeolite water softeners with semi-automatic controls.

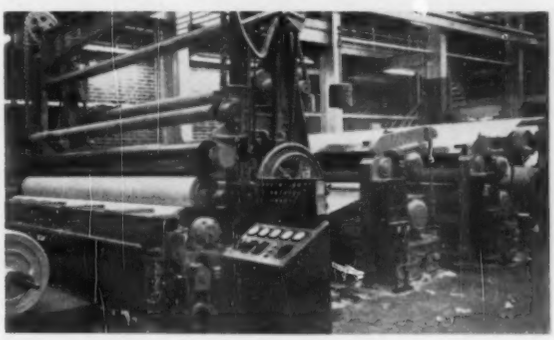
Three 3460 gpm Graver reactivators and eight 30 ft. gravity filters are used to treat water from the production end of the mill. Clay for the water system is unloaded by a Fuller Airveyor system which has a Roots-Connersville Blower. Batson-Cook Construction Co. performed building construction of this new mill and machinery was installed by the Eichleay Corp. Electrical work was done by T. D. Little Co.

Staff at Palatka

Under direction of its resident manager, Rudy Paradis, University of British Columbia graduate who began his career in 1936 at Crown Zellerbach's Ocean Falls mill and was formerly assistant resident manager at Ontario Minnesota Pulp & Paper, Hudson's resident staff includes Gen. Supt. W. L. Jones, Sr.; Tech. Dir. T. T. (Tex) Collins; Asst. Tissue Mill Supt. Al Gilbert; Tissue Converting Supt. Bob Alexander; Pulp Supt. A. E. (Doc) Harper; Chief Engineer Rae Mills; Plant Engineer John Leggett; Power Supt. C. W. Wright; Master Mechanic Earl Dunn; and Chief Electrician Roth Poe.

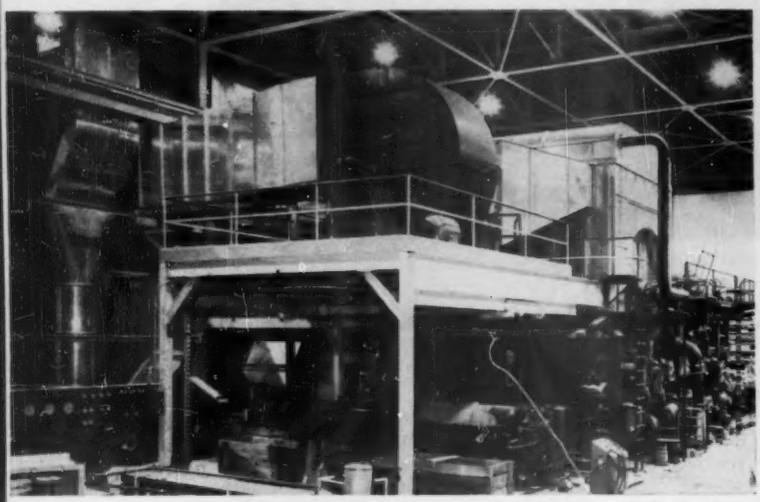


SPECIAL SLEEVE BEARINGS withstand occasional end thrusts which momentarily affect this combination of Elliott 300 hp 720 rpm squirrel cage induction motor and Bauer disc refiner.

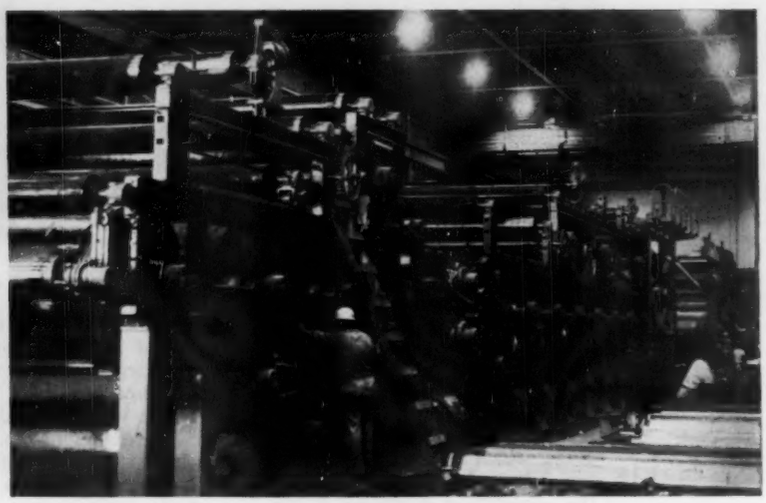


TISSUE BECOMES TWO-PLY HERE. Cameron unwinder and slitter rerolls tissue into two-ply 60-in. rolls, and size 21 slitter reduces it to convertible size rolls at 4000 fpm.

MARATHON'S MAIN OFFICE IN SOUTH—management, woodlands, accounting and public relations are here. . .



NAHEOLA'S NO. 1 MACHINE . . . a Beloit Yankee dryer making Northern tissue products, up to now produced only at Marathon's Green Bay, Wis., division.



NAHEOLA'S NO. 2 MACHINE . . . This is a 186 in. trim Beloit Fourdrinier machine for kraft papers and lightweight paperboard.

Naheola: Another Mill For Dixie

Marathon Southern gets $40 million integrated pulp and paper operation into production in wilds of western Alabama

Naheola, Ala.

• Just two years ago, this western Alabama town was little more than a black and white sign sitting against an M&B railroad trestle across the Tombigbee River.

That was before Marathon came South.

Today, things are different, Marathon Southern Corp.'s sprawling $40 million pulp and paper mill is in production and it is changing the face of the land; this land at any rate.

Marathon Southern is an operating unit of Marathon, in turn a division of the American Can Co. Its fully-integrated mill is producing bleached sulfate pulp, paper, lightweight paperboard, towels and Northern Tissue products. The paper mill alone houses a Beloit Yankee dryer, Sandy Hill Kamyr pulp dryer and 186-in. trim Beloit Fourdrinier.

To this hill land wilderness, once swampy and inhabited only by game and an occasional hunter, this is what Marathon means:

An annual payroll which will run to something more than two-and-a-half million dollars. Employment for 600 people.

A water system utilizing 25 million gallons a day—enough to supply the city of Mobile, 150 miles to the South.

"Lot for sale" signs decorating the trees of woodlands where wild turkey

and deer once lived. Marathon has already built 150 homes, partially financed by F.H.A. in the nearby towns of Linden and Butler, to be sold to employes on a long-term loan basis. (First resident in Linden: Ken Bryant, Rumford, Maine, instrument foreman; first in Butler, George Smits, Green Bay, Wis., converting supt.)

Annual use of 200,000 cords of pulpwood, 30% of which will be once hard-to-sell gum, bay, magnolia, cotton wood and other medium hardwoods. This will mean an extra two-and-a-half million dollar market for tree farmers in this area.

New stores and business in Myrtlewood (onetime population 300); county seat Linden, 10 miles away (population before Marathon, 1,363) and Butler, 24 miles distant on the west side of the river.

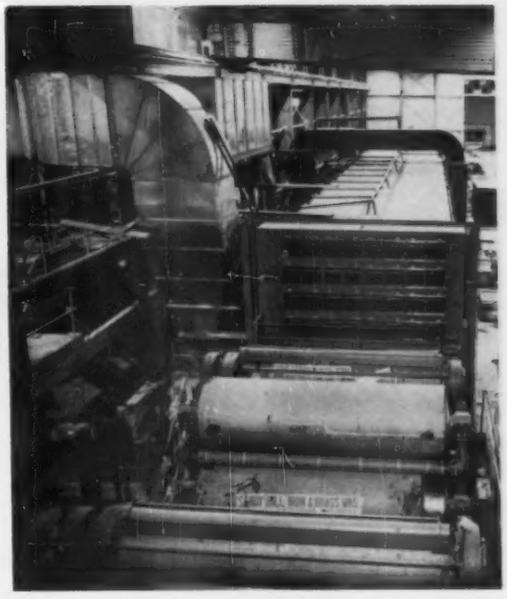
A great potential for the Meridian & Bigbee railroad, which connects the new mill with the Louisville & Nashville; Frisco, Southern and IC railroads. They will bring raw materials, carry out the finished product to market.

The new manager responsible for this latest addition to the Southland's paper growth is John E. Spalding, MIT graduate, veteran Salisbury, Mass., papermaker and former supt. of Marathon's paper operations in Wisconsin. Mr. Spalding was instrumental in developments leading to products now on the retail market. His assistant manager, George Barbender, a University of Wisconsin alumnus, was a member of the corporate committee which selected Naheola as the plant site. He was former technical director at Rothschild, Wis.

A Timberland Gold Mine

Also a member of the committee was J. V. (Vince) Martin, woodlands manager, a graduate of the University of Syracuse forestry school and the first to arrive on the local scene. His office has been established in Meridian, Miss., since early 1955. One of his chief jobs: Helping local farmers who want and need assistance in establishing good forestry practices and increasing the yield of trees on their lands. Marathon will produce only 10% of its needed 200,000 cords a year from its own lands, rely on local wood producers for the rest.

Marengo County, home site of the mill, and neighboring county, Choctaw, with six contiguous counties embraces 3,125,300 commercial forest acres which produced 317,938 standard cords of pulpwood in 1954—a veritable gold mine. Marengo alone contains 365,500 acres of commercial forest and produced 39,241 standard cords in '54. The 1951-53 forest survey estimated softwood volume of timber in Alabama's Southwest-North region at 1,430.2 million cubic ft. Marathon's woodlands people will keep their fingers on the pulse of this region with a tightly-organized two-way radio network.



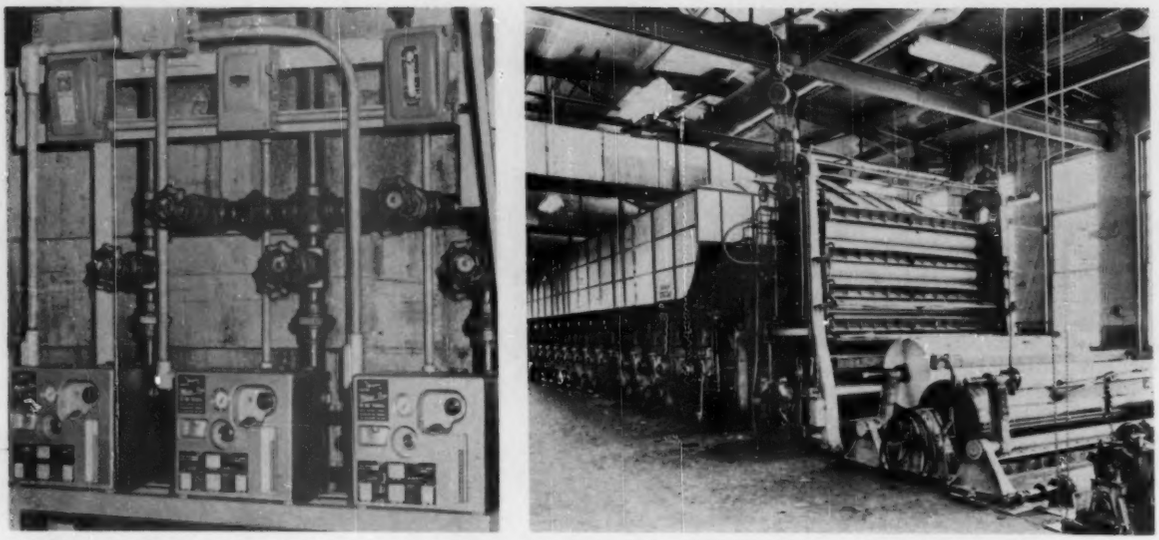
PULP DRYER . . . built by Sandy Hill Iron & Brass Works and Kamyr, Inc. at Hudson Falls, N. Y.

$600,000 "Insurance Policy"

To meet the stiff requirements of Alabama's Dept. of Health, Marathon has taken out a $600,000 "insurance policy"—the price tag on its 105-acre settling basin to protect the Tombigbee from any detrimental effects.

A giant clarifier will separate sludge into a 35-acre lagoon where it will remain until the lagoon is filled (estimated time: eight to 10 years.) Water will go to a 75 acre man-made storage pond with 750 million-gallon capacity, where it will be held up to 60 days to build up dissolved oxygen. Then it will be filtered through sand beds into the river.

ANOTHER BIG SOUTHERN MILL in what were "the wilds" of western Alabama is Marathon Southern at Naheola.



MANY SAVINGS ACCOMPLISHED by 3 Lubro-Control units (left), interconnected, serving Gould Paper Co.'s 144-in. No. 3 machine (right).

Automatic Lubrication Cuts Costs

Reduces downtime, stops bearing failures, removes fire risk, cuts down oil consumption and stops excessive maintenance

• Gould Paper Co., Lyons Falls, N.Y. is a groundwood specialty paper mill making high grade printing papers used by such publications as *McCall's, Redbook, True, Modern Screen, TV Guide* and other magazines.

Machines No. 1 and 2 are 96-in. Bagley-Sewall (Black-Clawson) built in 1895 and operating at 500 to 750 fpm. No. 3 is a 144-in. Bagley-Sewall, built in 1910 and operating at 950-1,180 fpm.

Early in 1957 Gould became concerned over its faulty lubrication system on these three paper machines. Bearing failures were causing downtime, machines had to be shut down once a week for lubrication, and grease and oil drippage created a fire hazard and required extra maintenance work and more downtime.

A decision was reached to convert the hodge-podge of outdated lubrication methods to a modern, efficient automatic system to serve all bearings on the three machines. After an investigation by Stewart O'Brien, maintenance supt., the management decided Micro-Fog lubrication best suited its requirements.

Profitable Results of Systems

1. Bearing failures stopped. Where frequent bearing losses were experienced on the felt carrying rolls of Machine No. 3, no failures have occurred since Micro-Fog lubrication was installed. It is Gould's belief that bearing failures with the hand grease method used previously were due as much to over-lubrication as to under-lubrication.

2. Bearing temperatures reduced. Average temperature of the 86 half-plain bearings on the dryer rolls of the No. 3 Machine, formerly oil bath lubricated, has been reduced from 189° F. to 139° F. On No. 1 and 2 machines, the temperature of dryer roll bearings of half-plain type were reduced 10°F to 20° F. The temperature of these bearings has been reduced to a range of 125° to 165° F.

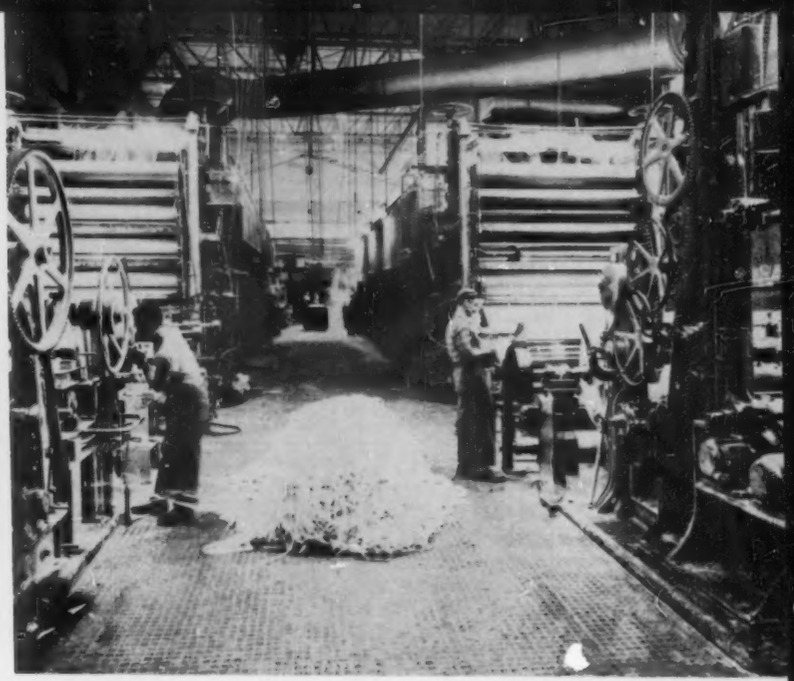
3. Maintenance costs slashed. Substantial savings have been made by eliminating machine downtime due to bearing replacements. The expense of the bearings themselves has been eliminated from their cost sheets. The ending of extensive hand oiling on No. 3 and elimination of block grease replacements on No. 1 and No. 2 has cut maintenance considerably. The drippage of oil and grease over felt edges, machine frames and floors has been eliminated.

4. Lubricant savings. Oil consumption on each of No. 1 and 2 machines is 1½ gals. in 24 hours. Considering cost of the grease blocks formerly used and maintenance time for the periodic replacements, Gould is money ahead. No. 3 Machine with three Micro-Fog units which serve 224 bearings uses 2¾ gals. of oil in 24 hours. The oil consumption by the oil bath method previously used 7.3 gals. in 24 hours, on just the 86 dryer roll bearings.

5. Fire hazard removed. Messy, oily conditions which existed at the No. 1 and No. 2 machines were a problem. Maintenance men spent valuable hours in cleaning up. That fire hazard has been eliminated.

6. Uniform oil delivery. To prove the efficiency of Micro-Fog lubrication, Gould's maintenance supt., Stewart O'Brien, checked bearings on all three machines after each installation. He reported consistently uniform oil delivery to all bearings—and said bearings were perfectly lubricated.

MICRO-FOG CONTINUOUS LUBRICATION for . . .



NO. 1 and 2 MACHINES at Gould mill.

How Conversion Was Done

On a 4-day week-end, conversion started on No. 2 at the following critical points:

50 half-plain bearings (6⅝ in. dia. x 10 in.) on the dryer rolls, formerly block grease lubricated.

22 calender roll bearings—ring-oil type (oil bath lubricated) replaced with Torrington spherical roller bearings (No. 130D30K, 5.1181″ bore; No. 160SD30K, 6.2992″ bore).

On another long week-end, conversion to Micro-Fog was made on No. 1.

Over Labor Day week-end, conversion was started on the No. 3 machine. This included:

86 half-plain bearings (9⅛ in. dia. x 12 in.) on the dryer rolls—formerly lubricated by the oil bath method.

12 dryer roll bearings—converted to Timken double-row, tapered roller bearings, 7½ in. bore (No. 93750, No. 93125)—formerly oil bath lubricated.

100 felt carrying roll bearings—Shafer spherical roller type, 2 3/16 in. bore (ZPS203 and ZMX203)—formerly gun greased.

18 calender roll bearings—converted to Torrington spherical roller bearings, 6.2992 in. and 7.4803 in. bores (No. 160SD30K and No. 190SD309)—formerly ring-oil type.

8 press roll bearings—SKF spherical roller type, 7.0866 in. and 7.4803 in. bores (No. 23036K and No. 23138K).

King roll bearings on the calender stacks will be converted later. Micro-Fog lubrication has been tested there and found satisfactory.

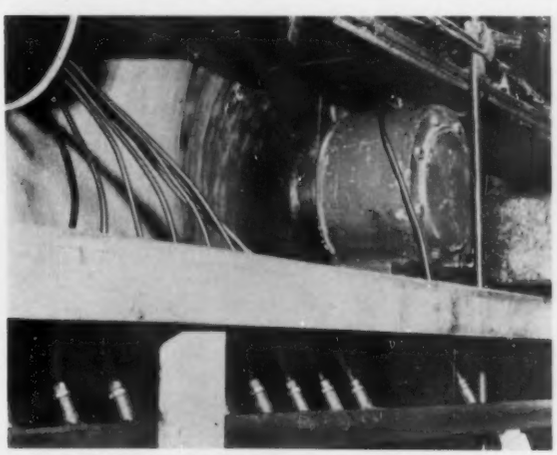
Description of Five Units

Five Norgren Micro-Fog, Lubro-Control units (Model 33AF-16) serve the three machines. One unit each completely lubricates No. 1 and No. 2 machines, while three units serve the larger No. 3 machine. All are installed in the wells below the machines.

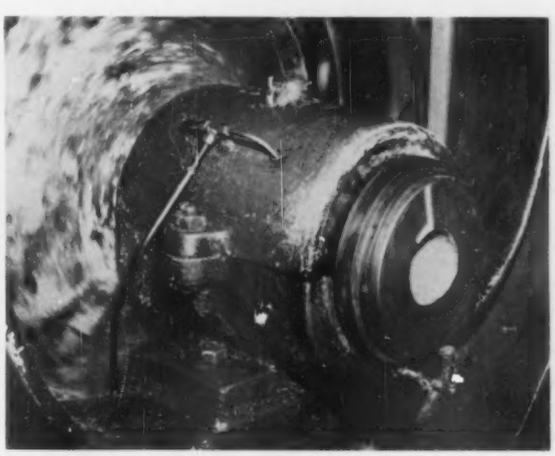
Units include: 1) air filter with automatic drain to remove moisture and solids from the air stream and prevent contamination of the lubricant; 2) air pressure regulator to reduce main line air pressure to the proper working air pressure required for the lubrication system; 3) a solenoid valve to start and stop lubrication as the machine power is turned on and off; 4) a 2-gal. Micro-Fog lubricator with visible oil feed and supply; 5) two pressure switches and a float-actuated switch for a warning system—all in a compact unit only 12 by 11 by 9 in. The oil feed sight glass, oil level gauge glass, oil filler plug, air pressure gauge and air pressure adjusting screw are all recessed in the front of the unit for easy accessibility and protection.

The two units that serve the No. 1 and No. 2 machines, as well as three units that serve No. 3, are interconnected. This is a safety measure to insure adequate lubrication. If one of the Micro-Fog units should become inoperative for any reason, sufficient lubrication would be provided by a companion unit until full service is restored. Gate valves are installed on manifolds close to the units.

Gould has utilized facilities afforded by these units to set up alarm systems to warn of conditions which may affect proper lubrication. A panel



MICRO-FOG LUBRICATED Timken bearing in No. 3 machine dryer roll.

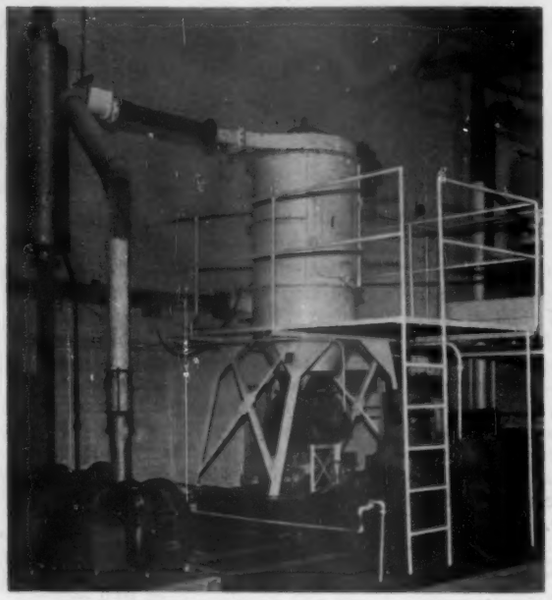


HALF-PLAIN BEARING on dryer roll where automatic system reduced bearing temperature 50° F.

of red warning lights is at the papermakers' station for Machines No. 1 and No. 2 and another panel is at Machine No. 3. Two lights are connected to each unit—one to warn of low air pressure, the other of low oil supply. A sound signal is also installed at each panel to warn of electrical failures between the units and the panel of warning lights.

Lubricant is Mobil Vactra BB,600 S.S.U. at 100° F. Air pressure on systems for No. 1 and No. 2 machines is 18 psi and for No. 3 machine, 24 psi.

Two-inch manifolds are installed from each Micro-Fog unit to machines and extend along one side of each machine. All joints along the manifolds are welded and all take-off couplings are welded into the manifold. The take-offs from the manifolds are ¼ in. pipe taps and the lines leading from the manifolds to the points of lubrication are ⅜ in. copper tubing.



UNLOADS DRY CLAY at 12½ tons per min. Cyclo-Vac occupies only 180 sq. ft., stands 13 ft. high. Clay falls from it by gravity into 14,000 gal. tank, where it is dispersed by 75 hp. Lightnin mixer, within 4 hrs. after car is unloaded.

PETER HARRIS, BLANDIN CHEM. ENGINEER, EXAMINES HOSE. A 5 in. feeder line from r.r. car has four 90 degree elbows as it runs 75 ft. horizontally to separator. There is 8 ft. vertical lift.

Car Unloader Reduces Clay Handling Costs For Blandin, as It Increases Paper Coating

Blandin Paper Co., Grand Rapids, Minn., is saving time, space, and money in unloading bulk coating clay. A Cyclo-Vac car unloader, made by Superior Separator Co., Hopkins, Minn., operates like a giant vacuum cleaner, conveying 12½ tons of spray-dried coating clay an hour from 50-ton hopper cars.

"We're saving about $6,000 a year compared with costs handling slurry clay in the past," says Chemical Engineer Peter Harris. "The saving over bag clay is more substantial."

Now producing 80 tons of coated paper in daily output of 200 tons, the mill will use twice as much clay with its second coating machine, increasing coated paper production almost 100%.

Mr. Harris figures Blandin saves $1.19 per ton by unloading dry clay with the Cyclo-Vac. Using 100 tons a week on a 50-week year basis this amounts to $5,950.

For a typical period reveals that Blandin paid $1,011.04 for a 50-ton carload of wet clay. Freight costs of $1,066.58 and tax of $32 brought carload cost to $2,109.62. Cost of a ton at mill was $41.73.

With the Cyclo-Vac, Blandin buys a car of dry clay for $1,086.87 and pays $887.69 in freight. Tax is $26.63 for a carload cost of $2,001.19 or $39.59 a ton. Starting with the original saving of $2.14 a ton, Mr. Harris subtracts unloading and makedown costs of 95¢ a ton for a saving of $1.19 per ton.

A five-inch line is quickly connected to the hoppers of the railroad car, and the Cyclo-Vac operates as a negative pressure air conveying system. It uses a high speed, self-cleaning metal rotor which separates the conveyed dry clay from the air stream by centrifugal force.

Recovery of the clay is as high as 99.9%, and there is no dust problem. A level control above the air lock prevents build-up of clay and the possibility of damaging the rotor. If clay builds up in the Cyclo-Vac the pump shuts off automatically while an air lock continues to run and clear the system. Then the pump starts and conveying continues. This may happen only once or twice in a carload. Supervision is unnecessary.

"It takes about an hour to make connections, change to different hoppers and clean up inside the car with a shovel at the end of unloading," Mr. Harris says. "That means a man can handle a regular job and slip away long enough to take care of unloading."

The installation at Blandin Paper mill cost approximately $9,500.

Chesapeake Corp. Marks 40th

The Chesapeake Corp. of Virginia is in its 40th year of operation. The corporation was chartered in Oct. 1918. In Nov. 1918, it leased (and later purchased) the properties of the old Chesapeake Pulp and Paper Co., which had begun operation in 1914.

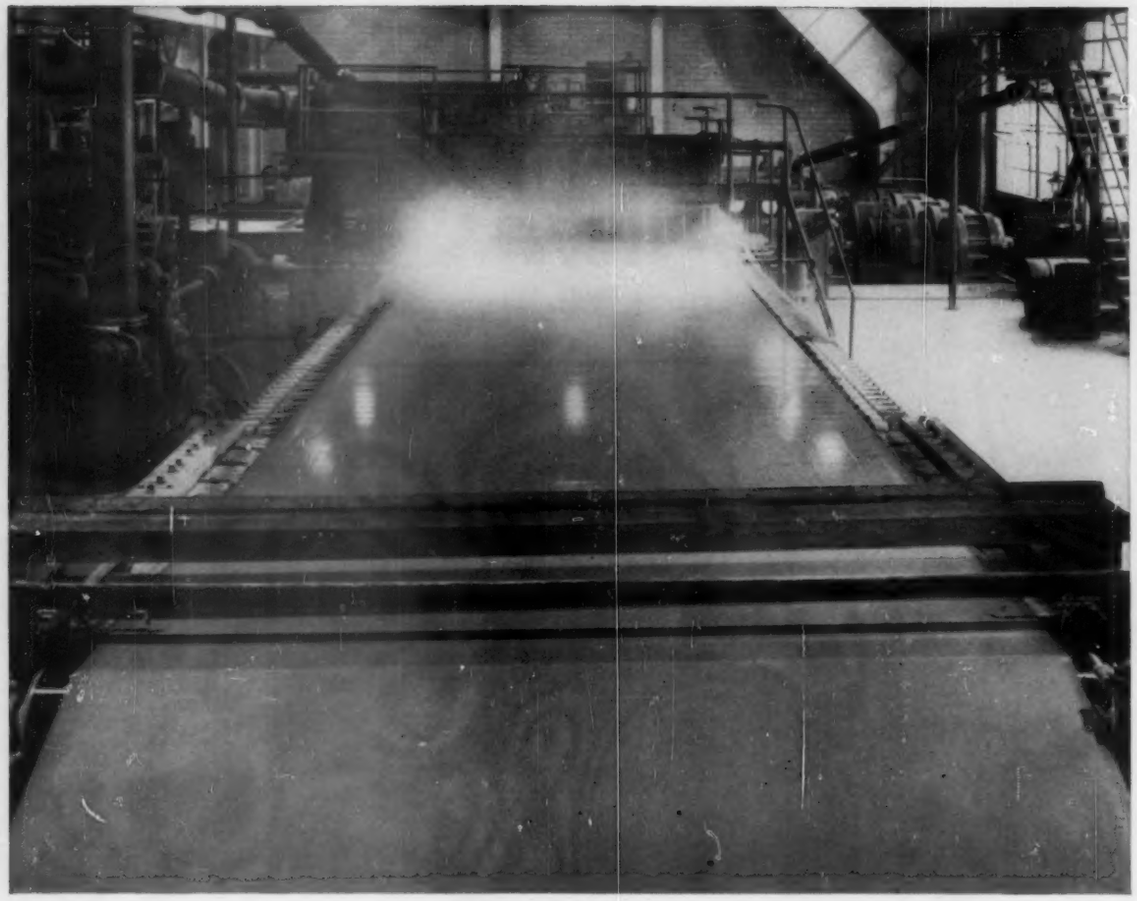
Nov. 15, the 40th anniversary of the arrival in West Point, Va., of Elis Olsson, for many years president and general manager and now chairman of the corporation, was celebrated by an open house at the mills on that day and the three preceding days.

1884
ANNIVERSARY
1959

J.J. & W.

YEARS in WOOD PULP

26, FARRINGDON STREET, LONDON, E.C.4
TELEX 23528. TELEPHONE CENTRAL 7714 CABLES WETTRE LONDON
MANCHESTER EDINBURGH



A Complete Starch Line... *tailor-made to your needs*

Today's complex papermaking operations require a wide range of starches—starches specifically designed to do a particular job. You'll find that the complete starch line offered by Corn Products Company includes types for every phase of modern papermaking. These starches are available in so many varieties that *they can literally be tailor-made to suit individual requirements* and production problems of individual plants!

For example, in beater sizing, preferred starches for improved surface qualities plus excellent bursting and tensile strength, include the many varieties of Globe and pre-cooked Amijel. For calendar sizing, you'll find a complete line of Claro and Eagle starches, as well as Globe starches for enzyme conversion. In this operation, Globe and Excello dextrines and thin-boiling Foxhead starches are also used. For general coating, with good viscosity at high solids content, use Claro and new improved Ten-O-Film starches.

And the research staff of Corn Products Company, largest in the industry, is constantly at work developing new products to meet the changing needs of modern papermaking.

Our technical representatives are completely versed in the problems that arise with wet end additives. Their impressive field experience and continuing research into starch, evidenced by frequent publications in trade and technical journals*, is always at your service. Take full advantage of the facilities and experience of the world's largest corn processors—call our nearest sales office or write direct.

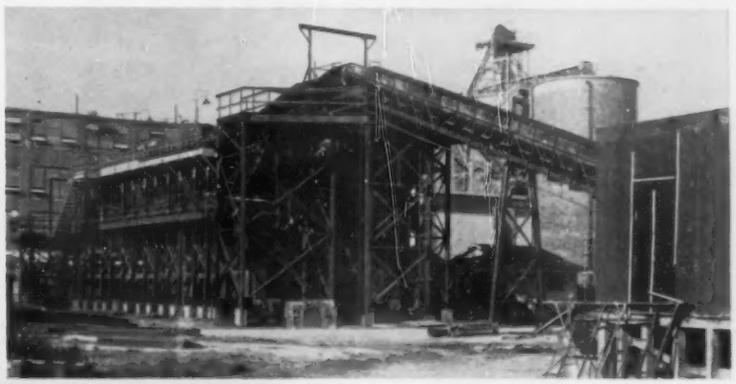
Fine products for the Paper Industry: GLOBE® • EAGLE® • FOXHEAD® • CLARO® • AMIJEL®
CORAGUM® • TEN-O-FILM® starches • GLOBE® • EXCELLO® • LAM-O-DEX® dextrines and gums.

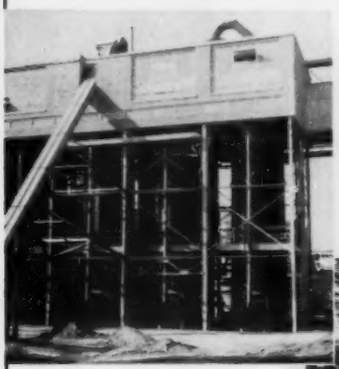
CORN PRODUCTS SALES COMPANY • 17 Battery Place, New York 4, N. Y.

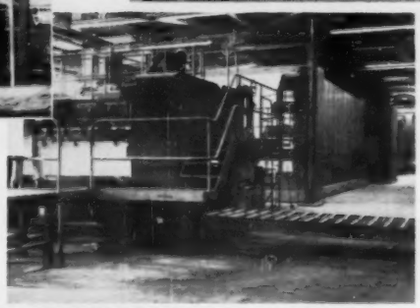
*A reprint on the results of corn starch usage is available on request from our New York office

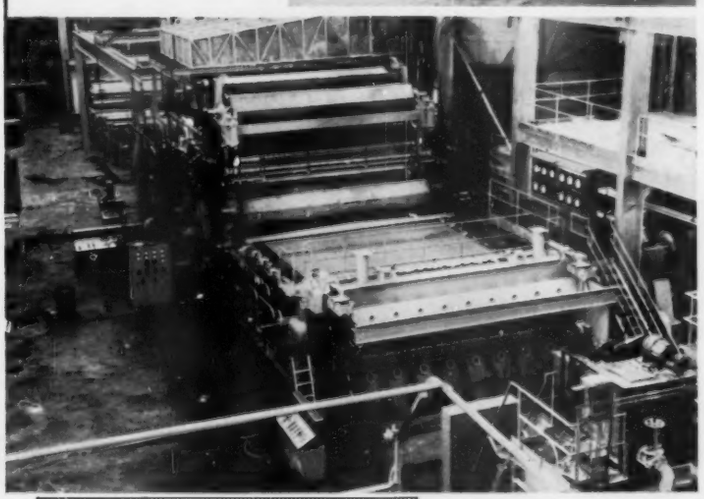
HUDSON PULP and PAPER CORPORATION, Palatka, Fla.

another Installation by *Eichleay*









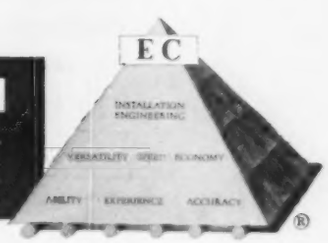
The proven worth of a contractor can be measured by repeat installations. The Eichleay Corporation was very much pleased that we again were chosen as the mechanical erector of the new expansion program at the Hudson Pulp & Paper Corporation's plant at Palatka, Florida. We are proud to state that we have many satisfied customers in the pulp and paper industry who find that our installations are efficient and economical and warrant repeat performances.

EICHLEAY SERVICES

- Industrial Installations
- Construction of Heavy Foundations
- Building and Machinery Moving
- Shoring - Rigging

Eichleay
ESTABLISHED 1875

CORPORATION
33 South 19th St., Pittsburgh 3, Pa.
1180 Richard Ave., Santa Clara, Calif.
11919 Avenue O, Chicago 17, Ill.
Eichleay Corporation International, Canada



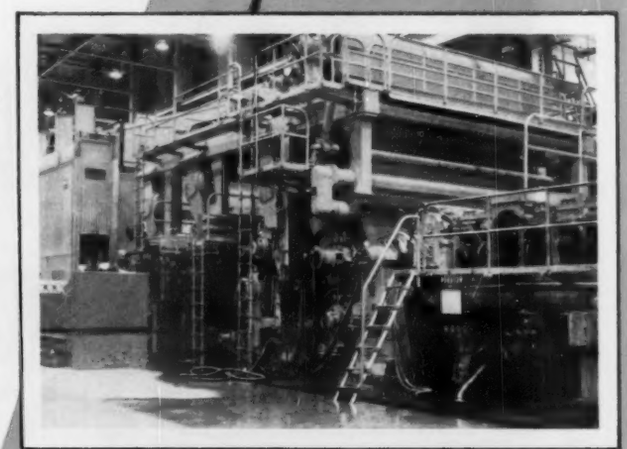
St. Croix
gets off to another good start with

NEW
HUYCK FELTS

There are many new papermaking ideas highlighted by St. Croix Paper Company's recently completed $14,000,000 expansion. Especially newsworthy is the extensive use of automation in controlling stock preparation, machine operation, steam and electric generation — and the outstanding performance given by Huyck 4-D treated felts during the start-up of the new #4 Beloit newsprint machine.

These new machine advancements, coupled with those of Huyck felts, have enabled St. Croix's skilled papermakers to boost their daily production of highgrade newsprint from 325 to 430 tons, and ultimately 500 tons, to *serve more customers better*.

St. Croix, like other progressive-thinking companies, continues to buy Huyck felts to solve its felt application problems.



Huyck Suction Transfer Pick-up Felts in operation on Suction Transfer Press Section of St. Croix's new #4 Beloit 192-in. trim newsprint machine, designed to operate at 2,500 f.p.m.

St. Croix Paper Company's Woodland, Maine newsprint mill, recently expanded at a cost of $14,000,000. Compared with previous capacity, production has been increased from 325 to 430 tons daily.

Rolls of St. Croix Paper Company's newsprint ready for shipment.

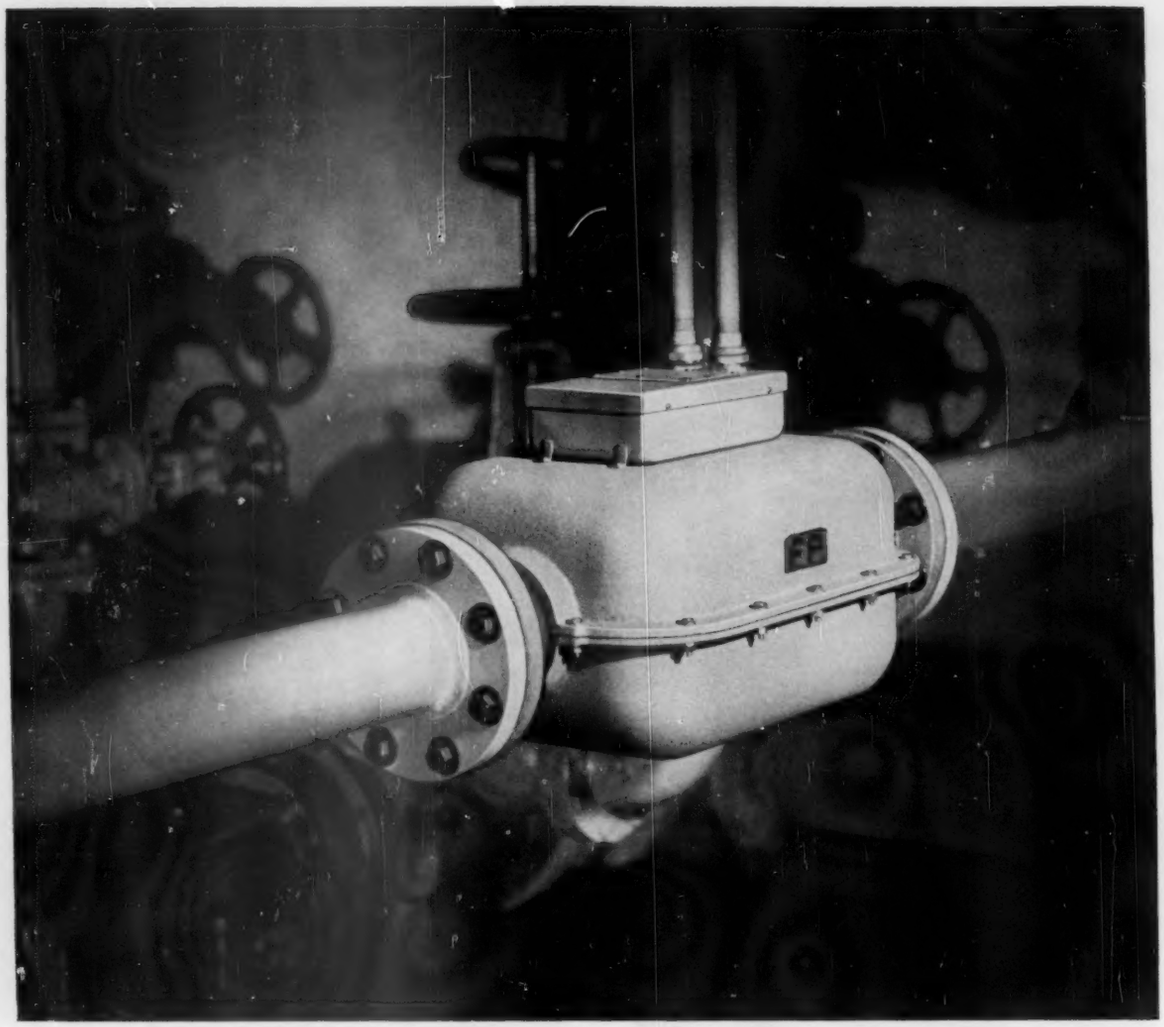
HUYCK FELTS

Huyck Felt Co.,
Rensselaer, N. Y.;
Alicaville, Ala.;
Division of F. C. Huyck & Sons.
In Canada: Kenwood Mills Ltd.,
Arnprior, Ontario

NEW HUYCK FELTS

INDUSTRIAL FABRICS

FIRST IN QUALITY • FIRST IN SERVICE SINCE 1870



NEW FLEXIBILITY IN OBSTRUCTIONLESS FLOWMETERING

Here's the world's *easiest-to-operate, easiest-to-read* magnetic flowmeter. You can set any flow value at *full scale* . . . from 1 foot per second to 30 feet per second . . . at the turn of a direct-reading dial! Accuracy is ± 1%, regardless of piping configurations. You get all the advantages of obstructionless flowmetering . . . plus these EXCLUSIVE F&P features . . . at no extra cost:

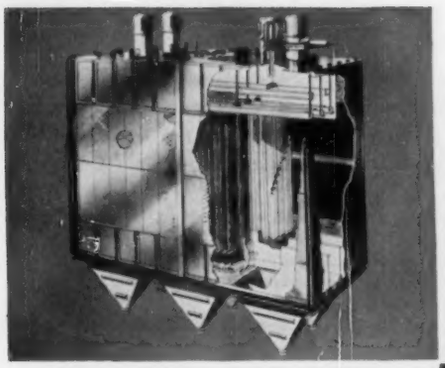
- *Any* primary is interchangeable with *any* secondary . . . no custom matching of meter to recorder.
- Remote recording *up to 2000 feet* from the meter.
- Range from 0.1 to 30 feet per second.
- Power requirements substantially reduced . . . 115v, 60 cycle a-c useable in *all* sizes.
- Can measure reverse flows *without auxiliary equipment.*
- Fast response time . . . 2-3 seconds for a 100% flow change.
- Adjustable damping of flow signal.

For complete details get in touch with the F&P field engineer nearest you and write for Catalog 10D1416. Fischer & Porter Company, 2228 County Line Road, Hatboro, Pa. In Canada write Fischer & Porter (Canada) Ltd., 2700 Jane St., Toronto, Ont.

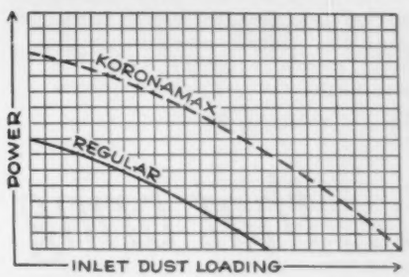
FP

FISCHER & PORTER CO.

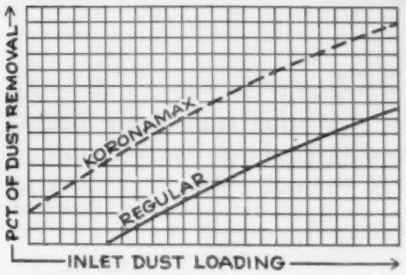
Complete Process Instrumentation



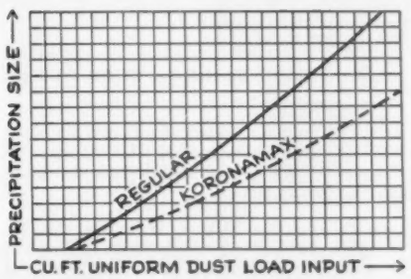
Another Koppers Exclusive in ELECTROSTATIC PRECIPITATION



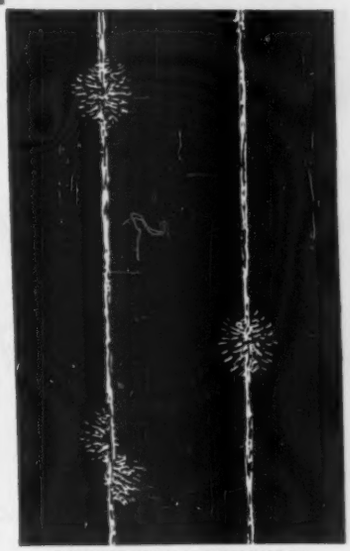
INCREASED POWER—The evenly spaced discharge points of "Koronamax" Electrodes reduce the arc-over tendency and permit increasing power input.



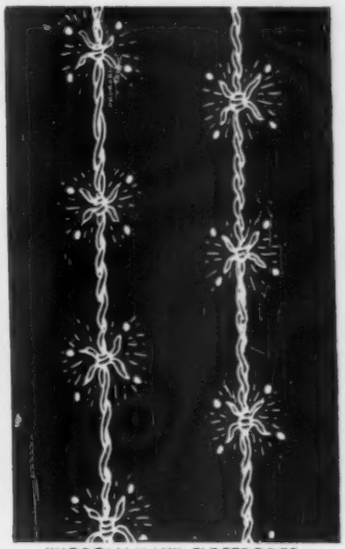
HIGHER EFFICIENCY—Replacement of regular electrodes with "Koronamax" Electrodes allows higher power input — greatly increased efficiency.



SMALLER SIZE—In new installations desired efficiency may be obtained with smaller unit when "Koronamax" Electrodes are used.



CONVENTIONAL ELECTRODES



"KORONAMAX" ELECTRODES

"KORONAMAX" ELECTRODES increase efficiency and capacity of electrostatic precipitators

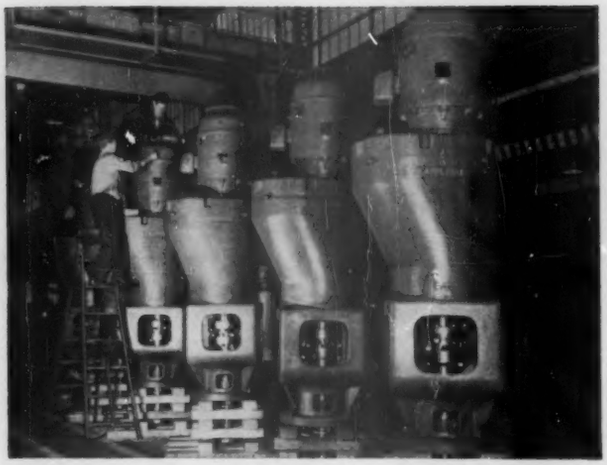
"Koronamax" Electrodes developed by Koppers are now in service in several different applications and their *controlled* corona discharge has resulted in greatly increased capacity and efficiency. This unique type of precipitator electrode may solve *your* gas cleaning problem.

Koppers' experience, constant research and extensive field testing have led to this important advance in precipitator design. Check with Koppers to see if "Koronamax" Electrodes can help you get top precipitator efficiency. For more information, write: KOPPERS COMPANY, INC., 9612 Scott Street, Baltimore 3, Md.

KOPPERS

ELECTROSTATIC PRECIPITATORS

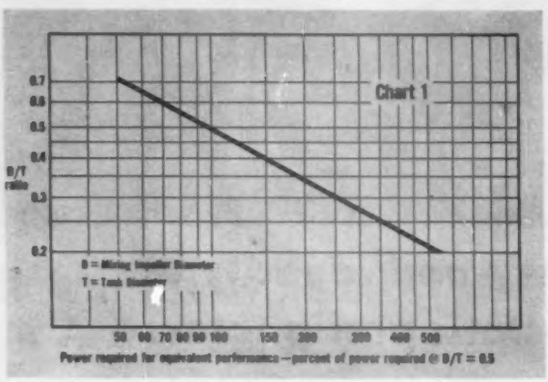
Engineered Products Sold with *Service*



Q. In larger mixing operations, what are the economics of buying mixers that match requirements *exactly* compared to buying mixers having an adequate margin of torque capacity?

A. As mixing operations are scaled up and fluid mixers required increase in size, the cost per unit drive torque capacity decreases rapidly with the increase in drive size. It becomes poor economy not to maintain an adequate level of torque applied to the mixing operation. Consider also that agitators and auxiliaries rarely represent more than a small percentage (2-4%) of the plant investment . . . yet maintenance costs on the more difficult operations can run as high as 15% or 20%. If down time is considered, then costs can run many times these figures. Obviously, there is no economy in drives and components such as shafts which *just* meet requirements.

it's questions like these... that bring out the facts in buying mixers...



Q. Are "dollars per horsepower" a valid basis for comparing mixer values?

A. No. Mixers having the same horsepower rating and drive efficiency can vary widely in torque rating. Torque applied to the mix is what does the work and torque is what you pay for. When comparing mixer values, the most important first step is that of developing torque ratings of alternate units offered. Using the most familiar units, torque can be calculated as follows:

$$\text{Torque (lb. inches)} = \frac{63025 \times \text{Motor HP}}{\text{Mixer shaft RPM}}$$

The mixer having the lower torque rating must use a higher mixer shaft speed and smaller diameter impeller to maintain a given HP level. This can lead to unsatisfactory performance. However, a mixer of equivalent horsepower rating but with a higher torque rating and larger impeller will do the job well. For an idea of the importance of impeller size, the chart shows the influence of impeller diameter in relation to tank diameter (D/T ratio) upon motor required to obtain a specific level of performance in many industrial mixing operations. The bigger impeller at the slower speed (higher applied torque) will be a sounder choice.

YOU GET MORE FOR YOUR FLUID MIXER DOLLAR
Because We Design and Build The *Whole* Unit

It's simple economics! Philadelphia Mixer is the only manufacturer that designs and builds the complete unit. Because we control production and costs, we can afford to give you more mixer per dollar. For example:

- Extra large, heavy duty bearings throughout.
- Extremely heavy output shafting—machined, ground and polished.
- Drives designed with extra strength and rigidity to take maximum thrust and unbalanced loads.

You don't pay a premium for these extras—or for the better performance and longer life of a Philadelphia Mixer. You get them as a bonus.

You can select your Philadelphia Mixer from six standard models. 1 to 200 HP. Special units to 500 HP. Horizontal motor or vertical motor drive. Mechanical seal or packed stuffing box. Paddle or turbine type impellers.

Get the full story on Philadelphia Mixers. Write for Catalog A-27. It contains complete mechanical design information that permits you to make a catalog selection of the mixer that best suits your requirements.

PHILADELPHIA GEAR CORPORATION
Erie Avenue and G Street • Philadelphia 34, Pennsylvania

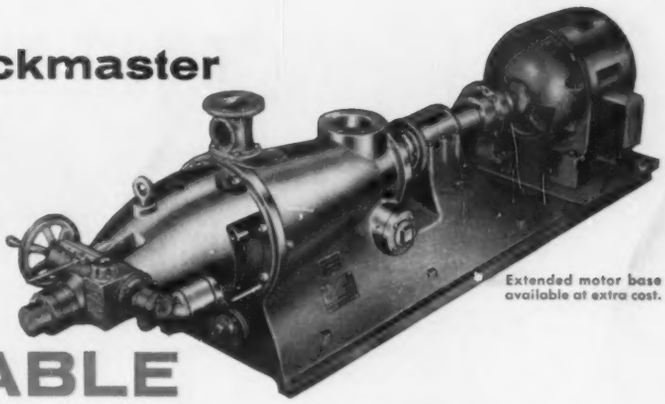
philadelphia mixers

Offices in all Principal Cities
INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS

FLEXIBLE

Jones Stockmaster

Wide selection of tackle, combined with suitable rotor speed, stock flow, consistency and stock pressure, provides complete flexibility in achieving desired results. Low in initial cost. Simple to maintain. Details in Bulletin EDJ-1047.

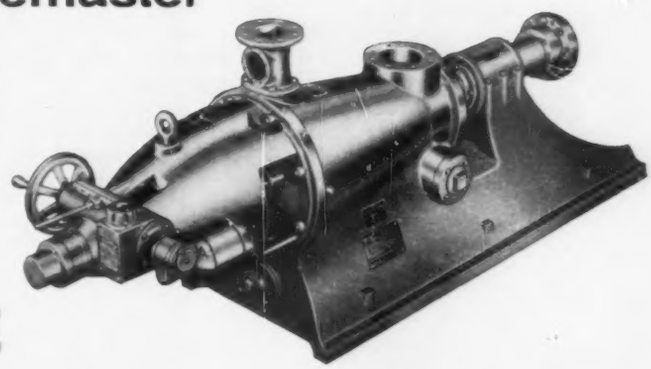


Extended motor base available at extra cost.

CONTROLLABLE

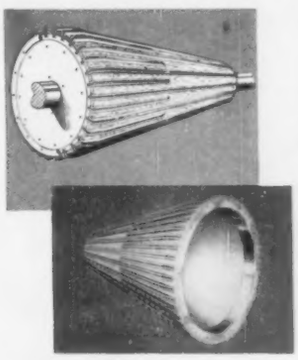
Jones Fibremaster

Close control of stock characteristics is assured in *all* Jones conical refiners through variety of tackle and highly accurate plug adjustment mechanisms. Split small heads facilitate dismantling. Fibremaster model is ideal general utility unit. Bulletin EDJ-1035A.



ADAPTABLE

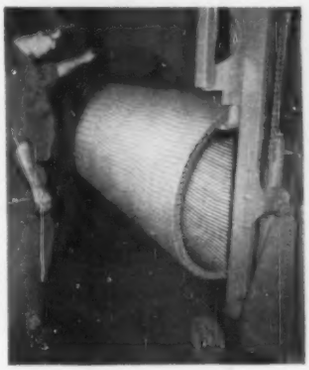
Jones Adapta-Plug and FULBAR Shell Fillings



FIT ANY JORDAN

Adapta-Plug is the strongest, simplest Jordan plug made. Completely bandless. Easiest to strip and fill. Available as solid plug — or in sleeve form for easy rejuvenation of old worn plugs. Bulletins EDJ-1094 and 1094A.

Fulbar Shell Fillings are available in *any* bar combination and *any* bar material for *all* makes of Jordans. Easiest-to-install, rigid, one-piece construction. Famous Nowave design. Bulletin EDJ-1094.



DEPENDABLE

Jones® Stock Preparation Machinery

E. D. JONES & SONS COMPANY
Pittsfield, Massachusetts
In Canada: The Alexander Fleck, Ltd., Ottawa

Export Agents: Castle & Overton, Inc., New York 20, N. Y.
Foreign Licensees:
France: Batignolles-Chatillon • Italy: de Bartolomeis • Spain: Gabilondo • Japan: Mitsubishi Heavy Industries

Republic ELECTRUNITE "Dekoron-Coated" E.M.T.

still resists corrosion after three years of service at Southland Paper Mills, Lufkin, Texas

Republic ELECTRUNITE® "Dekoron®-Coated" E.M.T. stopped costly corrosion at Southland Paper Mills, Lufkin, Texas.

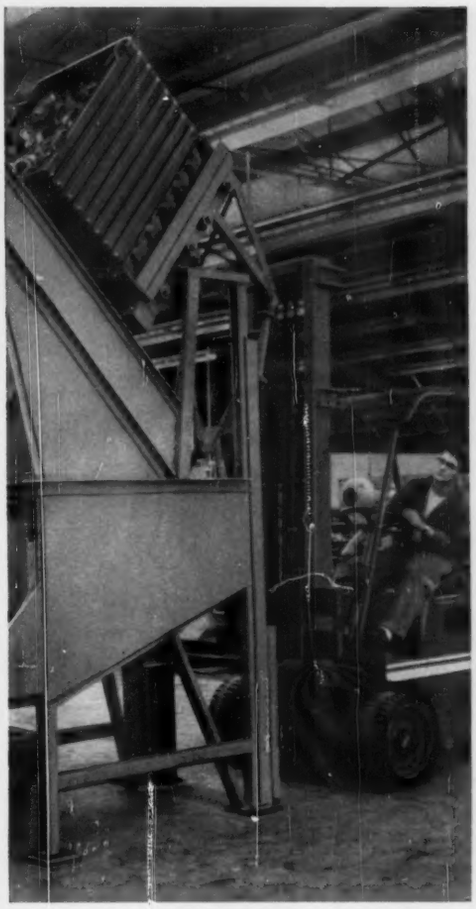
Previously, standard conduit had to be replaced at frequent intervals in certain locations exposed to tremendous quantities of steam, moisture, and chemical fumes. After three years of service, Republic's extra tough "Dekoron-Coated" E.M.T. is still in excellent condition—has required no maintenance, gives promise of continued years of usefulness.

Here's why: Tough, corrosion-proof polyethylene is applied over the galvanized steel finish. Republic ELECTRUNITE E.M.T. is below this plastic-coat surface. It is produced from highest quality flat-rolled open-hearth steel made in Republic's own mills, carefully inspected to Republic's rigid manufacturing specifications. Available in a full range of E.M.T. sizes and a complete range of rigid conduit sizes.

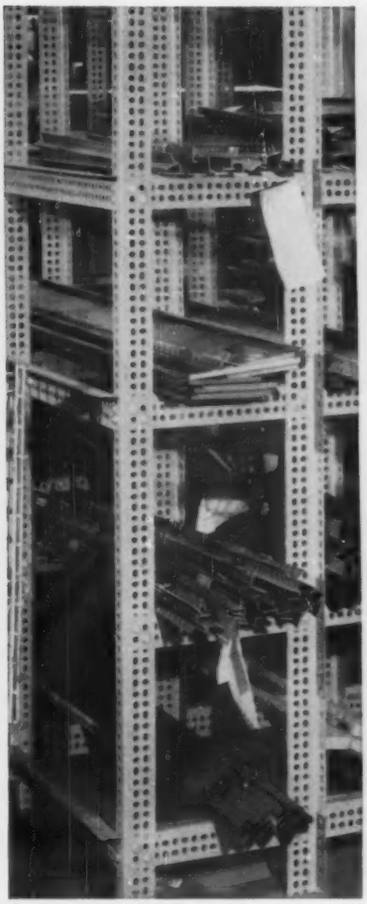
"Dekoron-Coated" E.M.T. is easy to install. It can be cut to length and bent to fit with ease. Moisture-tight, continuously grounded, corrosion-protected joints are made by wrapping the threadless connectors and couplings with plastic tape. Complete protection is assured from end to end.

Avoid lost production time and costly delays. Keep essential lighting and power lines operating by using Republic ELECTRUNITE "Dekoron-Coated" E.M.T. in severe corrosive conditions of service. Republic "Dekoron-Coated" E.M.T. meets electrical codes and specifications. For additional data, details, call your Republic representative, or send coupon today.

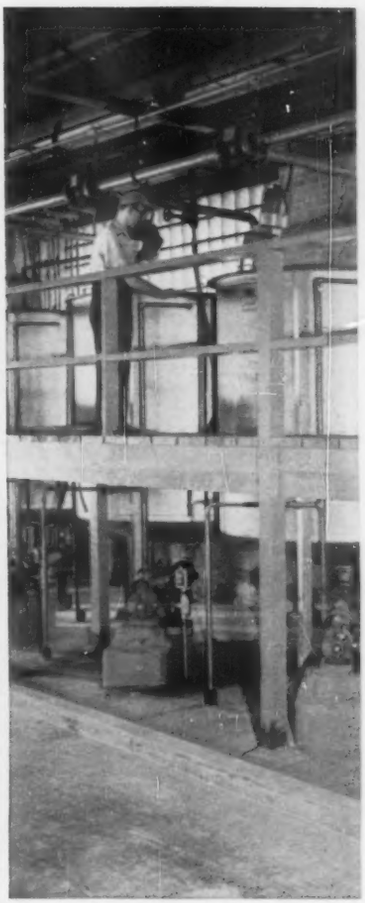
Republic ELECTRUNITE "Dekoron-Coated" E.M.T. stopped costly corrosion at the Southland Paper Mills, Lufkin, Texas. After three years of service, Republic's extra tough "Dekoron-Coated" E.M.T. is still in excellent condition.



REPUBLIC MATERIALS HANDLING IDEAS save space, cut costs, improve inventory control. Here, Republic Box and Skid Units are used in combination with special hoppers designed by Dresser Industries, Wellsboro, Pa. Opening in front of box hooks and locks on hopper. Lift truck operator trips dumping mechanism with truck forks, eliminates idle machine time. Let Republic help solve your materials handling and storage problems. For complete information, call or write today.



REPUBLIC METAL LUMBER® saves time, space, and money! Precision engineered system of short slots placed to allow ¾" vertical and horizontal adjustment, offers unlimited applications. Simply measure, cut, assemble. Bonderized to resist rust and damage. Baked enamel finish. Delivered in bundles of 10 angles, .080 gage or .104 gage, 10- or 12-foot lengths, bolts and nuts included. Stores in space of one 2" x 4" piece of lumber. Send coupon for idea-packed catalog.



STAINLESS STEEL ASSURES PURE COLORS, UNIFORM QUALITY. This battery of color storage tanks was recently installed by The Chillicothe Paper Company at its paper mills in Chillicothe, Ohio. Fabricated from Republic ENDURO® Stainless Steel, the tanks are indicative of Chilpaco's widespread use of modern stainless steel equipment in producing a wide variety of quality products. You, too, can enjoy the many advantages and economies of stainless. Call your equipment supplier.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. PP-6444
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send me information on the following:
- ☐ Republic ELECTRUNITE" Dekoron-Coated" E.M.T.
- ☐ Republic Materials Handling Equipment
- ☐ Republic METAL LUMBER
- ☐ Republic ENDURO Stainless Steel

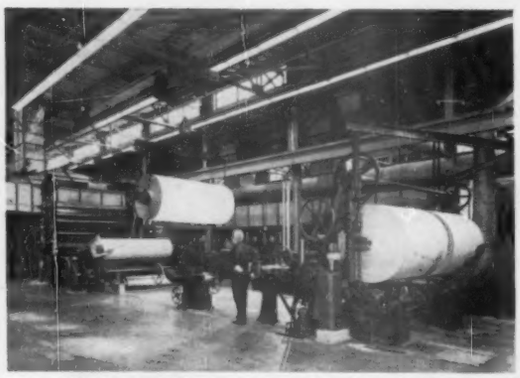
Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

SONOCO
Quality Here.....
.....Starts Here!



ABOVE—One of Sonoco's ten modern paper machines.

Sonoco paper mill cores are made from scientifically developed paper stock produced in our own paper mills. Many years of experience, research and development have established the highest standards for Sonoco quality control throughout every phase of paper mill core production. The end result is a cost saving factor from uniform, superior performance—core after core.

DUROLENE CORES: Premium Sonoco quality. Available as a non-returnable core in all diameters and lengths, or returnable with Bermico metal ends in standard sizes.

DURO CORES: Standard Sonoco quality. Available with or without Bermico metal ends.

Both Durolene and Duro cores guarantee ultra-high torque and crush strength, plus close tolerances to all dimensions.

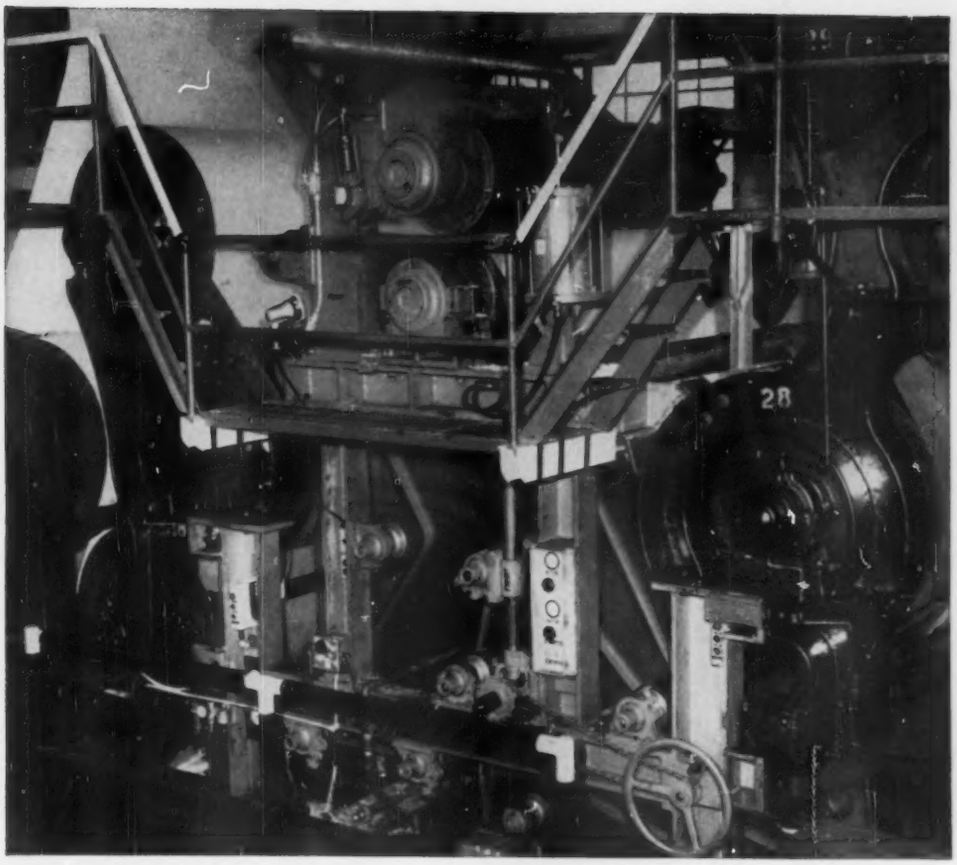
Specialty cores, from ¼" I.D. and up, in lengths to 24'. Supplied in colored stock or with special inside or outside wrap, plain or printed.

Main Office—Hartsville, S. C.

- Mystic, Conn.
- Lowell, Mass.
- Longview, Texas
- La Puente, Cal.
- Brantford, Ontario
- Akron, Ind.
- Phillipsburg, N. J.
- Philadelphia, Pa.
- Atlanta, Ga.
- Granby, Quebec
- Mexico, D. F.

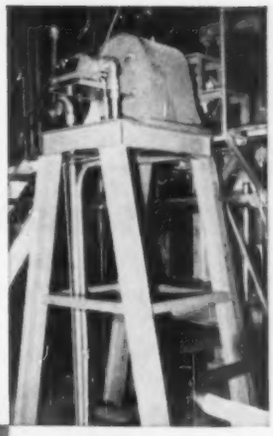
1866

SONOCO
Paper Mill Cores
SONOCO PRODUCTS COMPANY



Step up drying rate...get better finish

with a MANCHESTER HOT PRESS



Whether you make heavy board or fine lightweight papers, you can speed up your drying rate and improve sheet finish by installing a Manchester hot press in your dryer section.

One mill reports that it reduced steam pressure in its dryers from 50 p.s.i. to 30 p.s.i. with a Manchester hot press—more than compensating for drying capacity lost by removing five dryers for the installation.

Other mills consistently report improved sheet finishes after putting in a Manchester hot press.

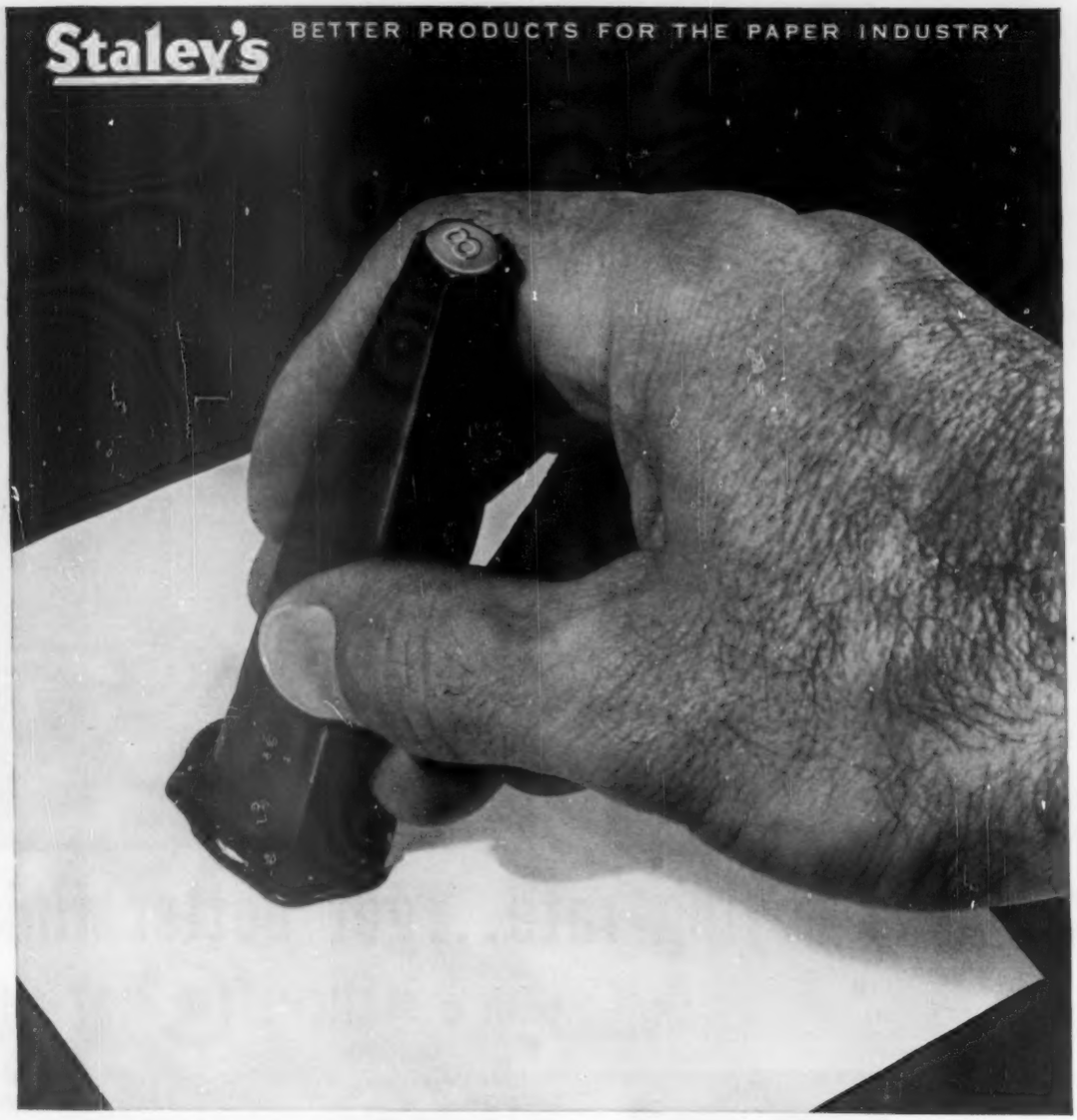
The hydraulic drive for the hot press (shown at the left) is compact, easy to maintain, and extremely simple to install. No building alterations are required, permitting the press to be readily installed over a weekend.

Manchester has wide experience in hot press work and can provide the kind of installation that will save money and make money for your mill. Write for more information applied to your particular needs.

THE MANCHESTER MACHINE COMPANY

MIDDLETOWN, OHIO

SPECIALISTS IN DESIGNING AND BUILDING PAPER MILL MACHINERY



WAX-PICK TESTS PROVE...

Staley's new Stadex® Dextrin 140 gives greater binding strength in higher-solids coating colors

Higher adhesive quality! Now you can use high-solids coatings of low viscosity *without sacrificing surface strength.*

Staley's new improved Stadex Dextrin 140 solves the problem of poor binding strength in high-solids coatings once and for all. Stadex Dextrin 140 is a high-solids clay coating adhesive with excellent stability, viscosity and binding strength characteristics. Used in combination with Stayco® (oxidized) starches, Stadex Dextrin 140 produces a coating of high adhesive quality.

Long a standard in the paper industry, Stadex 140, like all Staley dextrins, is now made by a brand new dextrinization technique that guarantees you even better adhesives of top quality, minimum color and unparalleled uniformity.

Why not get the full story on Stadex 140 for yourself now?

See your Staley representative or write us for details today.

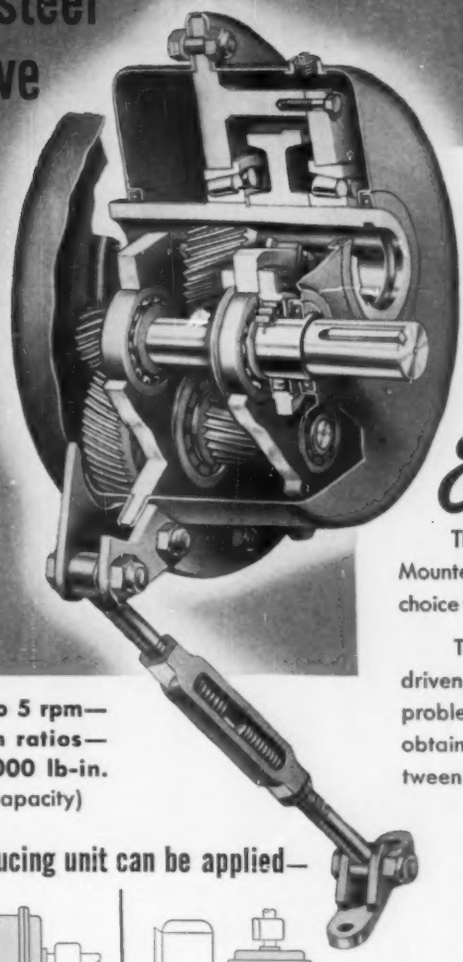
Staley's®

A. E. Staley Mfg. Co., Decatur, Ill.

Branch Offices: Atlanta · Boston · Chicago · Cleveland · Kansas City
New York · Philadelphia · San Francisco · St. Louis

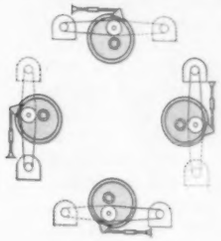
The FALK all-steel Shaft Mounted Drive

- *Versatile*
- *Efficient*
- *Economical*
- *Compact*

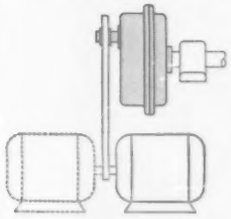


½ to 50 HP—420 to 5 rpm—single and two double reduction ratios—output torque ratings up to 41,000 lb-in.
(Consult factory for higher torque capacity)

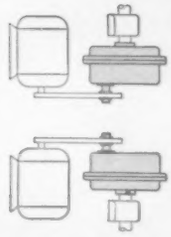
A few of the many ways this reducing unit can be applied—



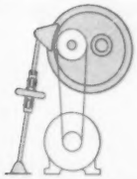
ANY POSITION



MOTOR EXTENDED
—or below the unit

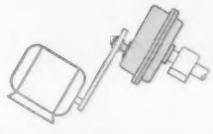


VERTICAL—UP or DOWN



VARIABLE SPEEDS...
through use of variable-pitch sheaves—automatic belt adjustment with tie-rod adjustment

OVERLOAD RELEASE...
that will slacken belts and cut off power if overload occurs



INCLINED SHAFT...
Any standard unit can be mounted in vertical or inclined position by a simple rearrangement of oil drains

THE FALK CORPORATION, 3001 W. CANAL ST., MILWAUKEE 1, WIS.

Representatives and Distributors in Most Principal Cities

Manufacturers of

- Motoreducers
- Speed Reducers
- Flexible Couplings
- Shaft Mounted Drives
- High Speed Drives
- Special Gear Drives
- Single Helical Gears
- Herringbone Gears
- Marine Drives
- Steel Castings
- Weldments
- Contract Machining

To Plant Engineers:

The versatility of the Falk Shaft Mounted Drive makes it the practical choice for many machines in your plant.

This compact unit mounts on the driven shaft, thereby solving many problems of restricted space. You can obtain almost any output speed between 420 and 5 rpm by selecting the proper single or double reduction unit and the proper sheave or sprocket ratio.

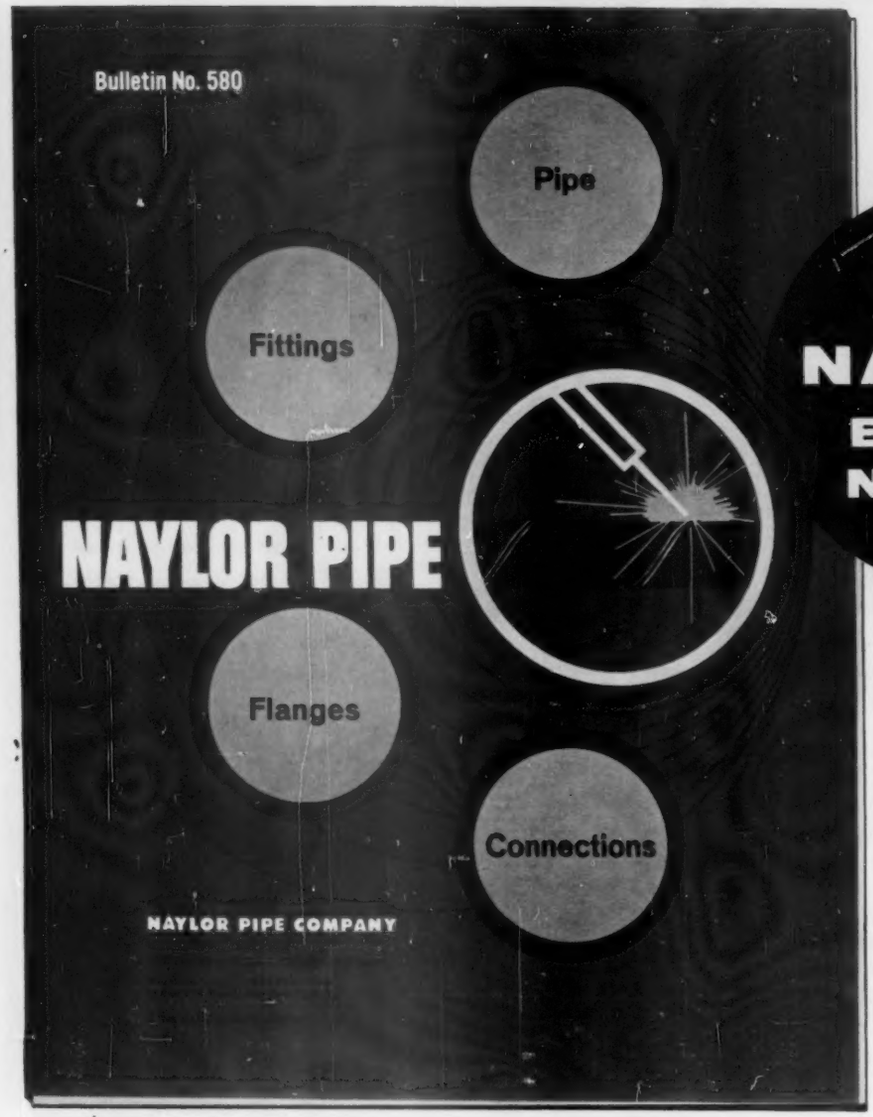
Do you need both horizontal and vertical drives? Standard Falk Shaft Mounted Drives are available for either application; or you can easily convert a horizontal unit to a vertical unit, right in your plant. Initial cost is low, you get immediate delivery from shelf stock, and installation is quick and easy.

★

FALK Shaft Mounted Drives are available from factory and distributor stocks *from coast to coast.* See your Falk Representative or Distributor—or write direct for your copy of **Bulletin 7100.**

FALK
...a good name in industry

Helps ANSWER Your PIPE PROBLEMS



Write for NAYLOR Bulletin No. 580

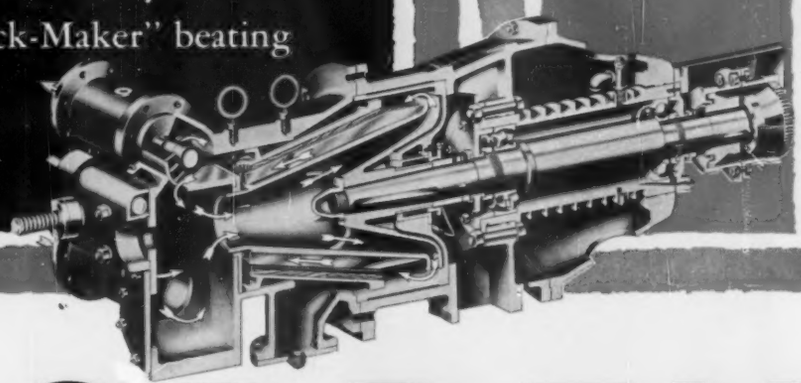
Here in concise form is helpful data covering NAYLOR pipe, fittings and connections for use in paper mill applications. Bulletin No. 580 includes standard specifications on NAYLOR Spiralweld pipe in sizes from 4" to 30"; standard fittings and welding flanges carried in stock; NAYLOR Wedgelock couplings and all types of connections to meet pipe line needs. Write for your copy today.

NAYLOR PIPE *Company*

1271 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

Hundreds of "Stock-Makers"
throughout the world,
operating on all types
of pulps and grades of paper,
have proven the effectiveness
and efficiency of
"Stock-Maker" beating



MORDEN

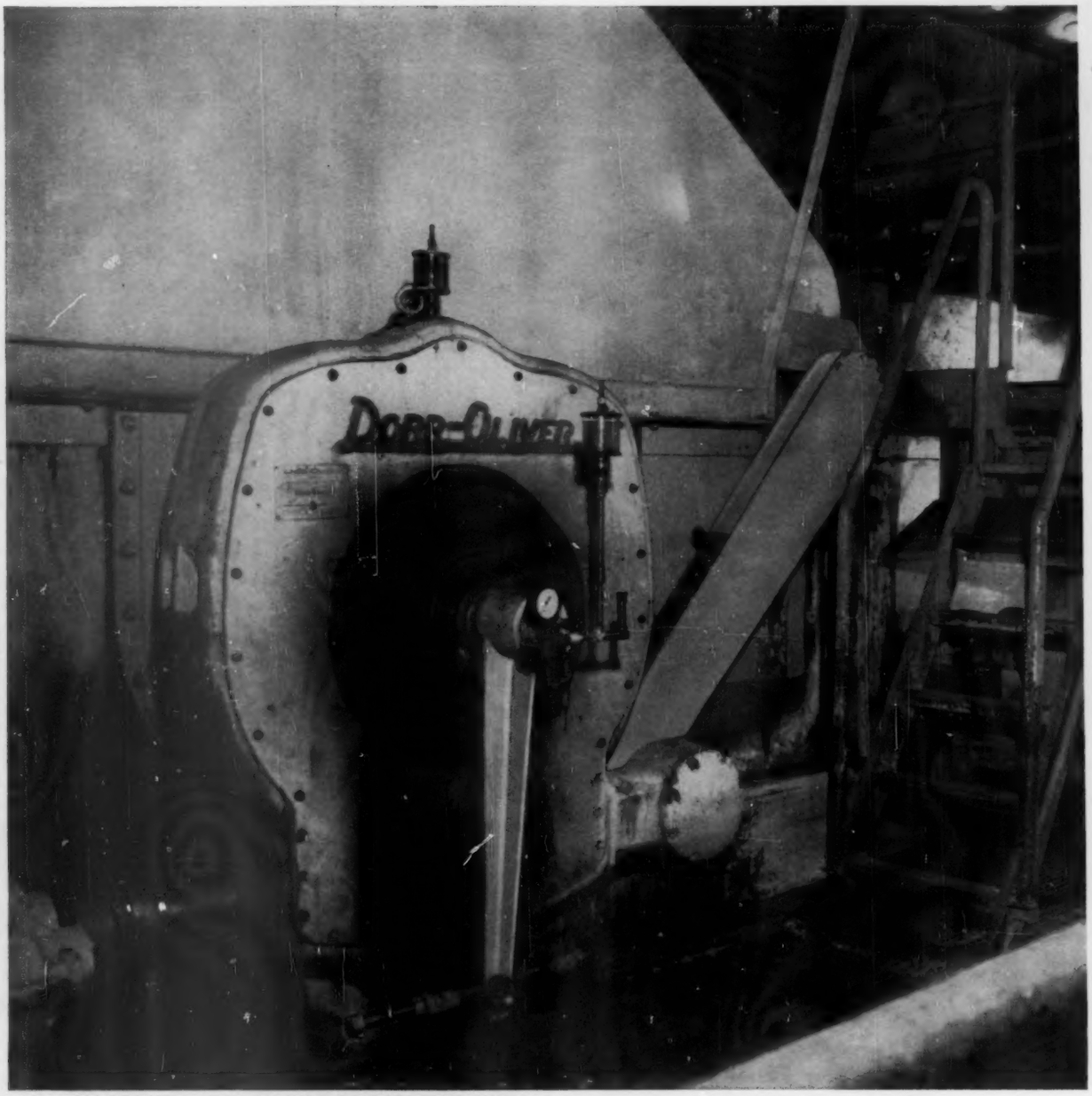
If your mill does not have the many advantages of Morden stock preparation equipment, don't delay — send for the Morden catalog today. We shall be happy to visit you for an in-the-mill discussion of your requirements.

SPECIALISTS
IN STOCK
PREPARATION
EQUIPMENT

MORDEN MACHINES COMPANY

3420 S. W. MACADAM AVENUE • PORTLAND 1, OREGON

UNITED STATES REPRESENTATIVES—Northeast: Orton Corporation, Fitchburg, Mass.; **Midwest:** Dan B. Chapman, Appleton, Wis.; **South:** Brandon Sales, Inc., Greenville, S. C.



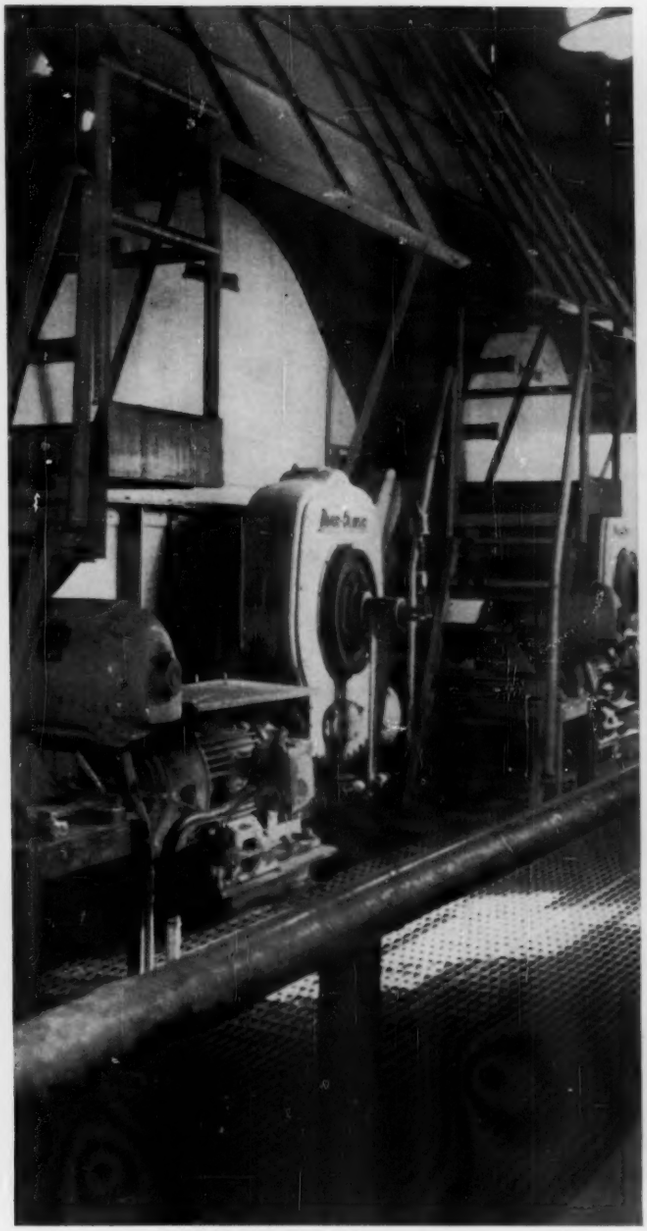
OLIVER BROWNSTOCK WASHING SYSTEM *handles 390 tons per day at the Weyerhaeuser mill, Longview, Washington*

Further evidence of the acceptance of the Oliver Brownstock Washing System is offered by the recent installation at the Longview, Washington mill of the Weyerhaeuser Timber Company.

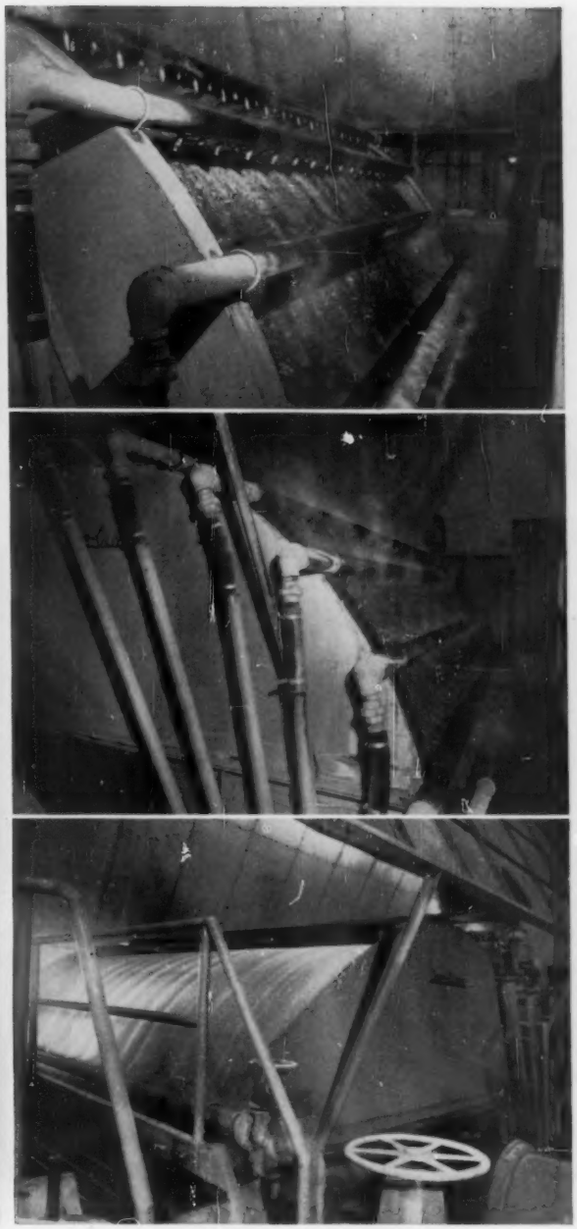
Three Oliver Type 55F cone valve Brownstock Washers, each 11'6" diameter x 16' face, with 478 square feet of filtering area, handle a peak load of 390 tons per day. Wood is Douglas fir.

As with other Oliver Brownstock Washer installations, distinctive features include: high efficiency, uniform sheet formation, high hydraulic capacity, and unusual ability to handle peak loads.

The success of the Oliver Brownstock Washing System is based on knowledge gained from more than 35



Overall view shows the three Oliver Type 55F cone valve Brownstock Washers installed in the Weyerhaeuser mill.



Three stages of the washing operation are shown in these photos. Note the clean, uniform sheet formation in the final stage.

years of designing, engineering and servicing hundreds of Washers in the pulp and paper field, as well as thousands of filters in the process field in general.

For more complete information on the Oliver Brownstock Washing System write for a copy of Bulletin No. 3303, Dorr-Oliver Incorporated, Stamford, Connecticut. Better still, let us send a Dorr-Oliver engineer to discuss your specific filtration or washing problem with you, placing at your disposal the wealth of information accumulated through our 35 years of Brownstock Washing experience.

OLIVER – TM, Reg. U. S. Pat. Off.

DORR-OLIVER
INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U. S. A.

WHERE THERE'S BUSINESS ACTION THERE'S A BUSINESSPAPER

One of the stepping stones to success is the ability to get the *inside word* on what's going on in your business. There's no better source for that *word* than the businesspaper serving your particular field.

In fact, there's no other source so complete, so timely, so authoritative. For facts. For news of the trade or industry. For fresh ideas in design, engineering, production, marketing. For the special information a man in any business needs to make decisions.

The man on the rise, like the man on top, reads his businesspaper . . . searchingly, carefully, thoroughly. Searchingly, for information he must have. Carefully, because he's reading for profit, not for pleasure. Thoroughly, because he wants to know, *what's in it for me?* And, for these reasons, he reads the advertising with the same intense concentration he devotes to the editorial pages.

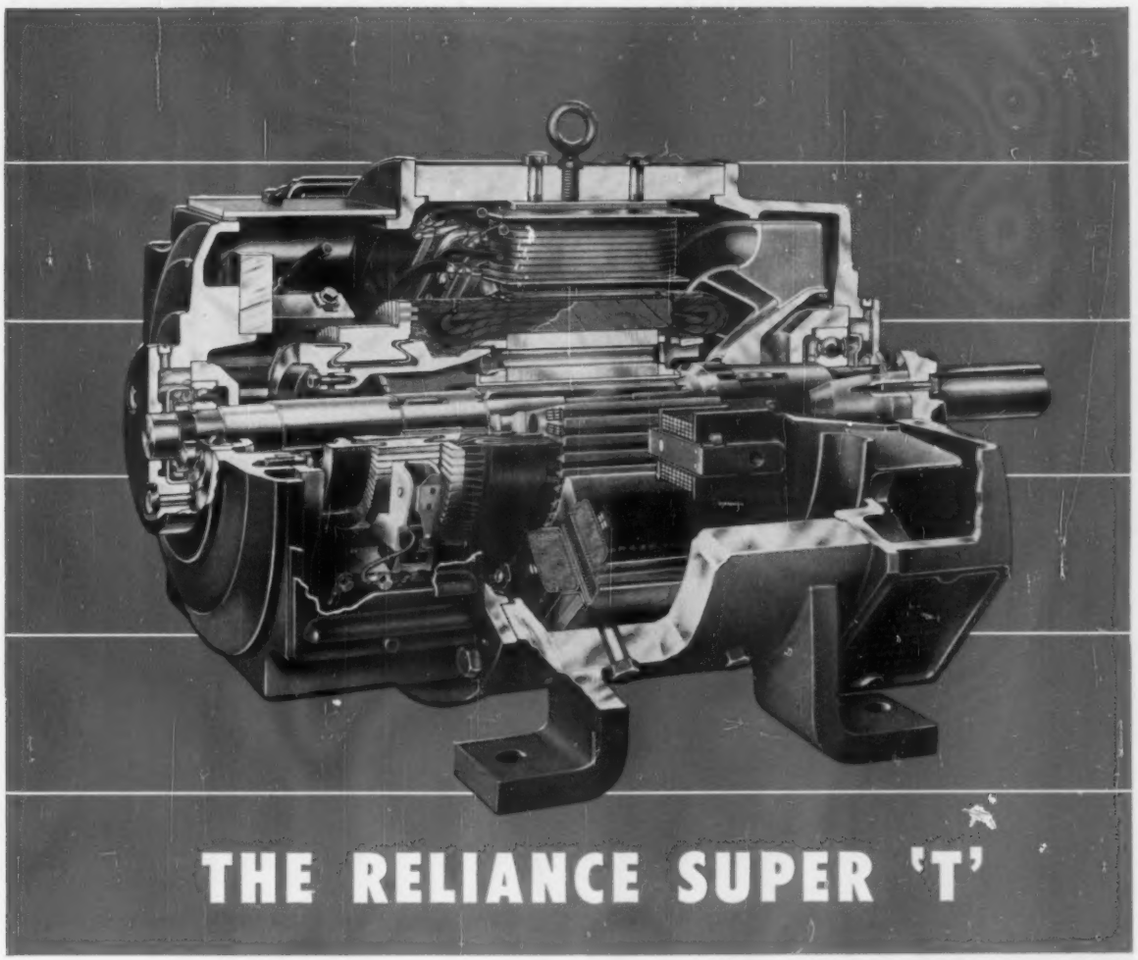
To keep on rising in your field take out your own subscription to your businesspaper. Then read every issue. Searchingly. Carefully. Thoroughly.

PULP & PAPER for the U.S. market

PULP & PAPER INTERNATIONAL for export

370 Lexington Ave., New York 17, N.Y.

One of a series of advertisements prepared by THE ASSOCIATED BUSINESS PUBLICATIONS



A New Kind of D-c. Motor With DYNAMIC RESPONSE

Here is a motor built to make maximum use of d-c. flexibility. The Super "T" puts Dynamic Response into starts, stops, and speed changes. Dynamic Response gives you a 50% increase in torque and a 50% decrease in reaction time.

This top performance is due to advanced balanced design. Lighter, small diameter armatures cut mechanical inertia 50%. Superior Class B insulation, gives extended life even at temperatures as great as 130°C.

Top grade insulation plus engineered ventilation lets the Super "T" take tremendous overloads. In fact, the Super "T" can develop double normal horsepower during starts, stops, and speed changes.

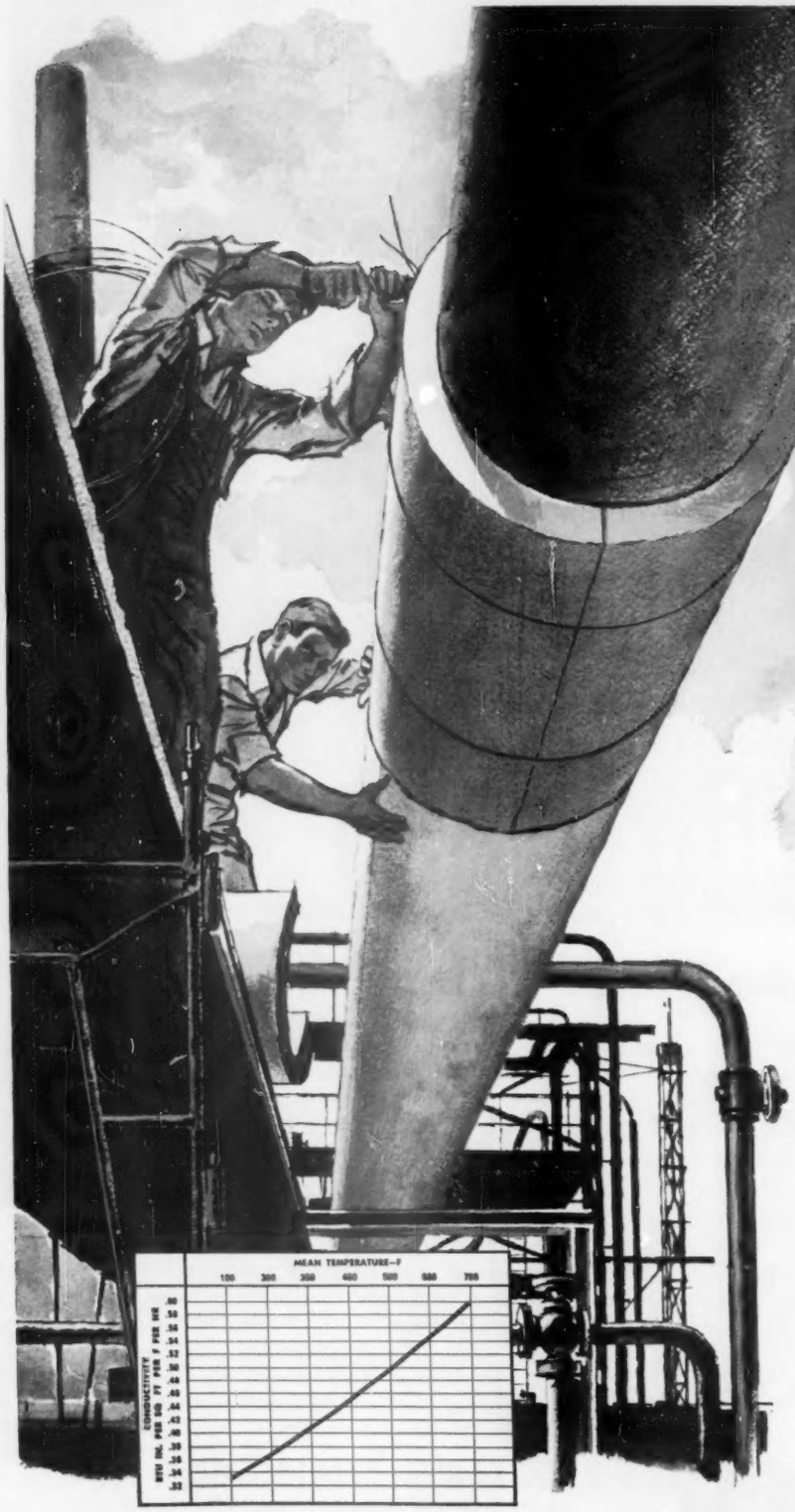
The Super "T" is a compact power package, designed inside and out for tough industrial service. From appearance to performance, the Reliance Super "T" with Dynamic Response is today's most modern industrial motor.

C-1577

MASTER REEVES R RELIANCE ELECTRIC AND ENGINEERING CO.
DEPT. 1811A, CLEVELAND 17, OHIO
CANADIAN DIVISION: TORONTO, ONTARIO
Sales Offices and Distributors in Principal Cities

In developing THERMOBESTOS Insulation

J-M at



Low Conductivity. The low thermal conductivity of Thermobestos is best demonstrated in actual service where it makes possible accurate, uniform temperature control, helps reduce fuel costs and contributes materially to operating efficiency.

Not damaged by water. Thermobestos has the moisture resistance outdoor service demands. Soak it in water for one day or 365—and you can still walk on it without damage. Dry it out and Thermobestos is as good as new, with conductivity and structural strength unimpaired.

Johns-Manville

for outdoor process industry applications

research scientists didn't stop top insulating effectiveness...

They added the three physical properties you most wanted—
HIGH STRENGTH—LIGHT WEIGHT
—MOISTURE RESISTANCE!

Thermobestos® offers the lowest k factor of all insulations in general use throughout the process industries. For maximum heat control on outdoor piping and equipment operating at temperatures to 1200F it just can't be beat!

Yet top insulating effectiveness is only one reason why more and more engineers are specifying Thermobestos for refineries, chemical plants, and wherever hot outdoor vessels and piping must be insulated. For Thermobestos also offers a threefold bonus . . .

. . . Three outstanding physical properties

Thermobestos is 1) strong and rigid. Its hard composition resists crushing and easily withstands unusual service abuse. Yet it is 2) lightweight for easy handling and fast application. And it is 3) highly moisture resistant, remains undamaged even by prolonged wetting.

Quickly, easily applied

Thermobestos is made from hydrous calcium silicate . . . molded to size for proper fit. Its high strength makes it particularly adaptable for time-saving shop prefabrication of fittings and bends.

Furnished in large sections, Thermobestos is easy to apply. It reduces the number of joints. In pipe insulation form, it comes in a complete selection of sizes up to 30″ O. D. Also available in 6″ x 36″ and 12″ x 36″ blocks in a full range of thicknesses.

For further information write for your free copy of the 12-page Thermobestos booklet, IN-169A. Address Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario.

INSULATIONS FOR LASTING THERMAL EFFICIENCY
MATERIALS · ENGINEERING · APPLICATION

JOHNS MANVILLE PRODUCTS

Get efficient loading on any footing

...in any weather...with a one-man "crew"

You "semi-skid" with no strain on the tractor, let big, heavy-duty skid-shoes be the "buffers." Impact forces of rough-ground travel are gentled 67% or more by patented, shock-swallowing Hydro-Spring!

With selective precision dumping control you release logs one at a time or all at once. Top grab-arm is controlled by a third valve of the hydraulic system. This valve is standard equipment and can also be used to control rear-mounted road-working equipment.

In snow three feet deep with pulpwood piles frozen tight...or in rain-soaked woods with stocks mudded-in ...in any weather...on any footing...the sure-going International Drott Skid-Grapple can give you top pulpwood loading efficiency. You need only a one-man "crew" to make big cash savings. Many owners report saving more than $1.00 per cord on production costs with a TD-9 Skid-Grapple.

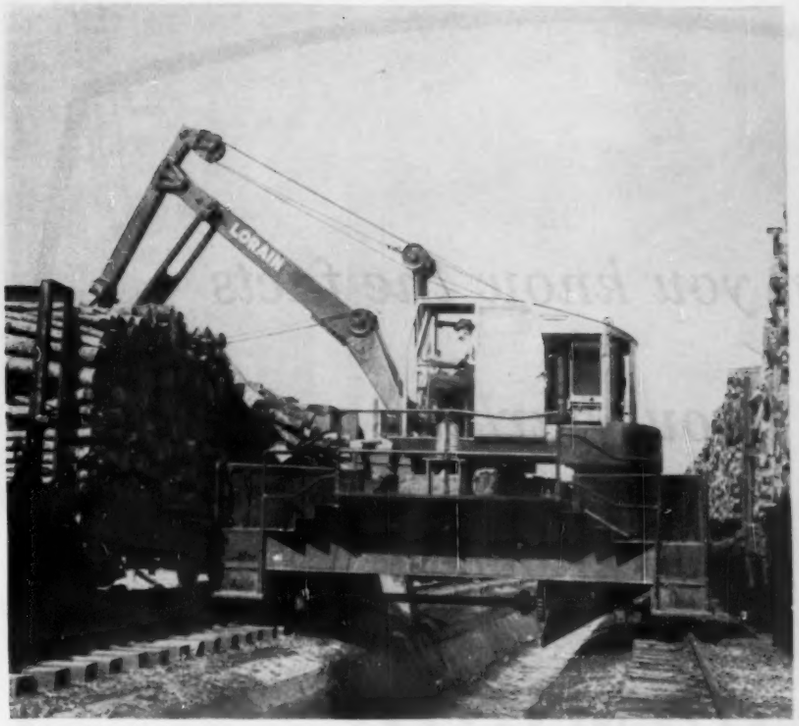
You just push the Skid-Grapple's lower prongs under the frozen or mudded-in wood piles. Then, clamp onto the load securely with the exclusive top grab-arm. Now, apply patented triple-power pry-over-shoe break-out action together with ground level roll-back.

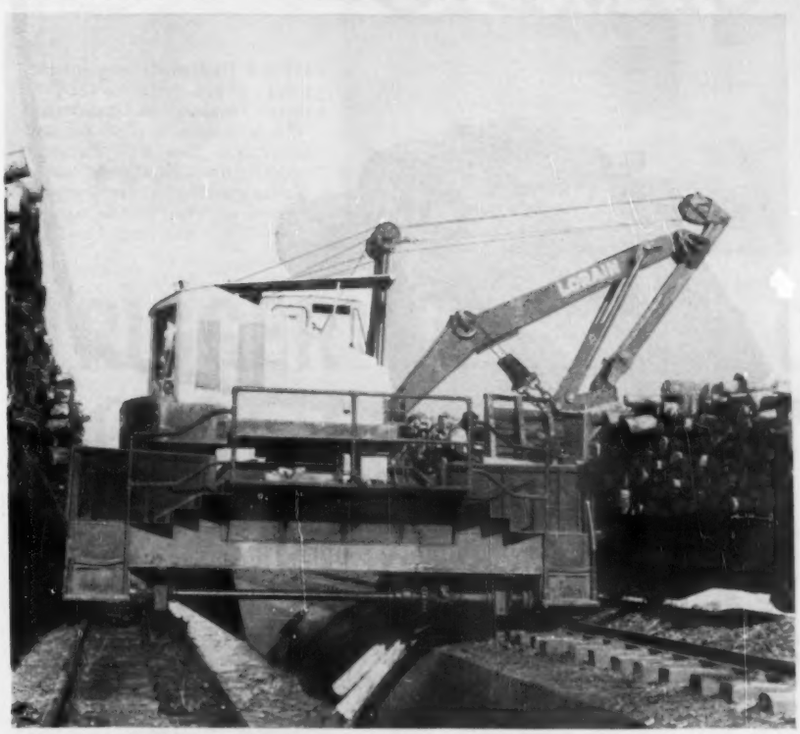
Using lift-frame mounted skid-shoes, you "semi-skid" the big grapple loads over any soil or terrain condition quickly, easily, and at low cost to truck or pile. Here again, positive, grab-arm load control speeds unloading, lets you release all the wood at once or a "stick at a time."

See how exclusive TD-9 Skid-Grapple advantages let you load up to 240 cords daily! There's an International Drott Skid-Grapple size to fit your pulpwood loading operation. See your International Drott Distributor for a demonstration of the size you need.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL®
DROTT®





TWO LORAIN RAKES UNLOAD 30 CARS IN 8 HOURS for

Masonite Corporation, Laurel, Mississippi

Working 2 eight-hour shifts a day, these model 25A Lorain gantry rakes unload up to 60 cars—each containing over 18 cords. This capacity more than meets the two shift requirements of the Masonite Corporation's Laurel, Mississippi, Mill.

Parallelogram boom design, engineered specially for the pulpwood industry, keeps raking board vertical for clean raking. Ground spillage is minimized and car damage virtually eliminated. Fast unloading moves cars in and out of the yard on time, avoiding costly demurrage.

Wherever you handle pulpwood, in the woods . . . in the concentration yard . . . or in the mill . . . a Lorain can step up your output. Lorains are available on gantries to unload directly to conveyor or flume, on rubber tires for mill or yard operation, or on crawlers for the toughest woods terrain. Use them with the attachment that does your job best—rake, grab, sling or grapple.

Ask your nearby Lorain distributor for the full story—and about his on-the-spot parts and service facilities that add so much when you buy a Lorain.

LORAIN®

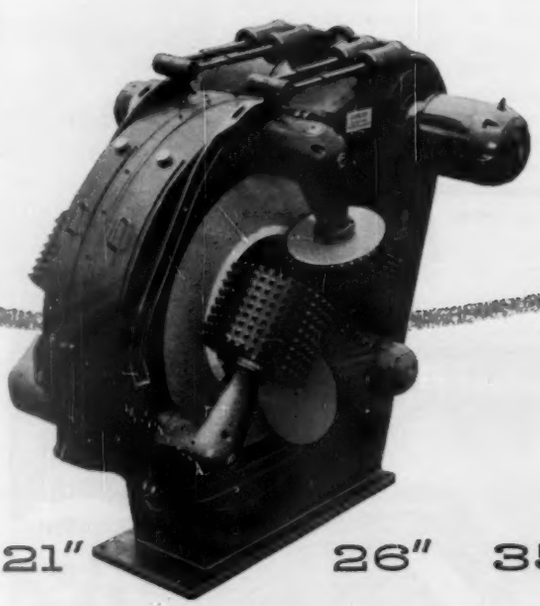
THE THEW SHOVEL COMPANY, LORAIN, OHIO

When you know the facts

about barking

you'll choose a

CAMBIO



8" 14" 21" 26" 35" 43"

SODERHAMN MACHINE MANUFACTURING COMPANY

Talladega, Alabama

West Coast: 9442 S.W. Barbur Boulevard, Portland, Oregon.

East Canadian Representatives: Forano Limited, Montreal, Canada.

SODERHAMN — FIRST NAME IN WOODWASTE UTILIZATION EQUIPMENT

This 30-ton capacity American 300 Series Self Propelled Crane transfers up to 7½ tons of pulpwood from truck to flatcar on every cycle—unloads a truck in 3 minutes! "Fast, efficient, dependable and mobile" sums up owner and operator comments about the complete American line of Cranes and Excavators.

Working a clamshell bucket is just one of many jobs American Locomotive Cranes handle with cost-saving efficiency. This self contained crane also works with hook, magnet, orange peel or grapple fronts—has power to switch railroad cars, too!

TRIGGER FAST AIR CONTROLS BOOST CRANE'S OUTPUT 20%

Fast, highly responsive air controls actually increase the daily production output of big American DiesELectric* Locomotive Cranes by 20%! Leading firms in the country's heavy industries have swung to American for their volume materials handling jobs. These cost-conscious firms have learned that the American's patented diesel-electric power system cuts operating costs sharply. Electrically driven trucks provide smooth switching and car spotting power while reducing maintenance costs up to 50%! Dependable diesel power on the machinery deck results in low cost materials handling power.

A variety of fronts . . . hook, clamshell, magnet, orange peel or grapple . . . provides every industry with a versatile, heavy duty, high production machine that will pay for itself in a hurry.

If you're interested in boosting handling volume while trimming costs, investigate American's new concept in crane design—the DiesELectric Locomotive Crane! Specifications on this complete line offering capacities from 25 to 130 tons are available immediately by writing:

*trademark

EXCAVATORS-CRANES
to 2 yds.-50 tons
LOCOMOTIVE CRANES
to 130 tons
DERRICKS-HOISTS
to 800 tons
REVOLVER CRANES
to 400 tons

AMERICAN HOIST
and Derrick Company
St. Paul 7, Minnesota

AMERICAN HOIST PACIFIC COMPANY
Special materials handling equipment

CROSBY-LAUGHLIN DIVISION
Drop forged fittings for wire rope-chain

A limited number of locomotive cranes available for rental service

VOLUME TO TRIPLE IN 30 YEARS. In northwest Washington at Wildcat Creek the stand contained 650 trees and 5,000 cu. ft. per acre at 35 year. By age 65, the number of trees will probably be reduced to one third and cubic volume tripled.

ALMOST COMPLETE SHADE. In the Pacific Northwest, a dense crown canopy, which admits little light to the forest floor, is normal in young hemlock stands. Except under small openings, understory vegetation is almost completely shaded out.

Don't Sell Western Hemlock Short

Young growth of this popular pulpwood species has remarkable growth record in Pacific Northwest rain forests

By EDWARD J. DIMOCK II

Pacific Northwest Forest and Range Experiment Station, U.S. Forest Service

● Remembering the poor quality of Eastern hemlock, early-day lumbermen were quick to discriminate against its Western counterpart. Not so long ago Western hemlock was little more than a nuisance to the logger —merely something to be brushed aside in the headlong race for Douglas-fir sawtimber. This stigma has hung on until quite recently. Now, with today's heavy demand for paper and chemical cellulose products, Western hemlock plays a vital role in our economy as a leading source of high-quality pulpwood.

Because of availability, old-growth timber stands continue to supply the great bulk of the Northwest's present pulpwood demand. However, the time is not far off when young-growth stands will have to bear a large and rapidly increasing share of the supply burden. How productive, then, will our young forest of hemlock and other "pulpwood" species be in the future? Will they adequately meet expected industrial needs?

We can, of course, only speculate about the answers to these questions. A necessary key to such speculation is a thorough understanding of yield potentials on pulpwood-growing sites —the sort of understanding that can come only from records on permanent growth plots.

Douglas-Fir Outproduced

Several decades of fruitful research have provided northwestern foresters with a fairly good concept of management possibilities in young-growth Douglas-fir. However, preoccupation with Douglas-fir has somewhat limited our present knowledge and thinking, and many will readily admit their comparative ignorance of growth and yield among other important species. Hence, it is not surprising that some are just recently "discovering" the tremendous productive capacity of the once-despised Western hemlock—a species that at younger ages can unquestionably outproduce Douglas-fir in net yield per acre!

Optimum growing conditions for Western hemlock occur on the west side of Washington's Olympic Peninsula. Though much of the timber there is old growth, typical of that

Stand age and plot location (drainage)	Number of plots	Forest type	Site index	Number of trees[1]	Basal area[1]	Volume	
						Cubic[2]	Intern. rule (¼")[3]
35 years:			Feet		Sq. ft.	Cu. ft.	Bd.-ft.
Wildcat Creek	Two	Hemlock	170	650	185	5,000	27,150
Winfield Creek	Three	Hemlock	200	377	238	7,650	45,800
Average (wtd)				486	217	6,590	38,350
55 years:							
Owl Creek	Two	Spr.-hem.	170	118	253	11,050	73,550
Matheny Creek	Three	Hemlock	170	310	291	12,260	78,550
Average (wtd)				233	276	11,780	76,550
65 years:							
Shale Creek	Two	Hemlock	160	198	299	14,700	99,800

[1]All trees over 1.5 in. diameter at breast height.
[2]All trees over 5.5 in. dbh (Excludes stump and top above 4-in. diameter).
[3]International rule (¼-in. kerf) includes all trees over 7.5 in. dbh (Excludes top above 6-in. diameter).

TABLE 1. Stand statistics for 12 growth plots in young-growth Western hemlock and Sitka spruce-hemlock stands in northwestern Washington, 1956. (Per-acre basis)

found in the coastal forests of the Pacific Northwest, extensive even-aged stands of young growth are scattered throughout.

In Jan. 1921 a violent windstorm leveled vast acreages of mature timber on the peninsula. This storm was the forerunner for many hemlock and Sitka spruce-hemlock stands now about 35 years old. Other young stands of varying ages also occur, and these are presumably the indirect product of similar winter storms—though some undoubtedly have followed fire. Such young stands afford the forester excellent opportunities to appraise hemlock increment and yield.

Study Plots Installed

During the summer of 1951, the state of Washington installed 12 fifth-acre permanent sample plots to study development of young-growth hemlock on lands lying between the Hoh and Queets Rivers (Olympic Peninsula). Ten of the plots are in pure hemlock; two, in a spruce-hemlock mixture. Site quality is high on all plots (Site Index 160-200), and three age classes (30, 50, and 60 years in 1951) are represented.

Cooperating with the state, the Forest Service remeasured the plots during the summer of 1956. This first remeasurement already shows the rapid growth that may be anticipated on better sites in this area—even in the short span of five years. Future remeasurements at periodic intervals will chart the dynamic course of stand development as these representative plots mature.

Laid out in clusters of two or three, the 12 plots sample stands in five different locations. It is reasonable, then, to average plot data in each cluster, thereby producing five composite plots to facilitate comparison. Similarly, the five composite plots may be further combined into three age groups.

Table 1 presents stand statistics as determined for these combined classifications. Conversion of cubic feet to cordwood tally (82 cu. ft. per cord) approximates utilization to a close pulpwood standard. Likewise, the international measure is a good estimate of actual sawmill tally.

Volumes per acre by international rule range from 38,000 bd.-ft. in the youngest stand to 100,000 bd.-ft. at 65 years. By pulpwood standards, plots in the 35-year-old stand support about 80 cords per acre; in the 55-year-old stand, about 145 cords; and in the 65-year-old stand, nearly 160 cords.

Scaled by the Scribner rule for trees larger than 11.5 in. to an 8-in. top, corresponding volumes are 25,000, 63,000, and 84,000 bd.-ft. for the three age classes.

Up to this point, static figures only have been considered. What has occurred in the five years since these growth and yield plots were established? Again grouped by age classes, the plots show that growth during the 5-year period did anything but stand still! (table 2).

Gross periodic annual increment approaches 4 cords per acre in the 35-year-old stand, and equals or slightly exceeds this figure in the two older age groups. Net increment is

Age span (years)	Item	Basal area[1]	Volume	
			Cubic[2]	Intern. rule (¼")[3]
		Sq. ft.	Cu. ft.	Bd.-ft.
30-35	Gross increment	7.2	303	2,240
	Mortality	1.0	10	25
	Net increment	6.2	293	2,215
50-55	Gross increment	6.2	331	2,405
	Mortality	1.9	54	304
	Net increment	4.3	277	2,101
60-65	Gross increment	5.2	328	2,075
	Mortality	4.0	168	665
	Net increment	1.2	160	1,410

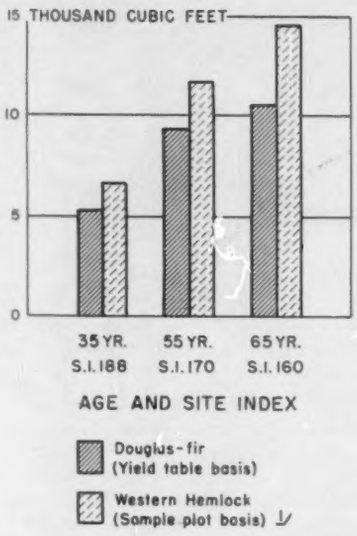
trees over 1.5 in. diameter at breast height.
[2]All trees over 5.5 in. dbh (Excludes stump and top above 4-in. diameter).
[3]International rule (¼-in. kerf) includes all trees over 7.5 in. dbh (Excludes top above 6-in. diameter).

TABLE 2. Periodic annual growth and mortality on 12 sample plots in young-growth Western hemlock and Sitka spruce-hemlock stands in northwestern Washington, by three age classes, 1951-56. (Per-acre basis)

better than 2,000 bd.-ft. in the 30-35 and 50-55 year growth periods, but falls below 1,500 bd.-ft. after 60 years.

This reduced net growth in the oldest age class is largely due to heavy windthrow (primarily as a result of adjacent clear cutting) that occurred on one of the two plots at Shale Creek. Furthermore, the slight reduction in gross increment at this age (all measures) is probably a vagary of sampling rather than a real indication of declining vigor or lower site.

To those familiar with the yield of Douglas-fir, the above figures may seem startling. For example, cubic volumes for the three age classes sampled in the hemlock and spruce-hemlock types range from 25 to 39% greater than corresponding values for Douglas-fir as presented in published yield tables[1] (figure 1).



1/ Two of twelve plots are in the spruce-hemlock type

FIGURE 1. Cubic volume yield of young-growth Douglas-fir and Western hemlock at specific ages.

Fewer Stems

The number of stems per acre continues to decrease rapidly after 35 years, whereas diameter of the average-sized tree steadily increases. The average tree is 9.0 in. dbh at 35 years, increasing to 14.7 in. at 55 years and 16.6 in. at 65. Average basal area for the three age groups is also striking: 217 sq. ft. at 35 years, 276 sq. ft. at 55 years, and nearly 300 sq. ft. in the 65-year-old stand.

Differences in site quality are also discernible between the two composite plots in the 35-year-old grouping. Winfield Creek (Site I) supports 53% more cubic volume per acre than Wildcat Creek (Site II). Spread in board-foot volume is even greater. Due to sampling variation, however, the best site II plot at Wildcat Creek has slightly greater basal area and cubic volume than the poorest site I plot in the Winfield Creek cluster.

Mortality Variable

Mortality on individual plots was so variable, ranging from 0 to 311 cu. ft., that the extent of its importance in stand development is still far from clear. Such losses, however, cannot be ignored for they represent a considerable sacrifice of site productivity.

Though it is logical to anticipate significantly greater mortality losses with increasing stand age, the heavy death rate in the two older age groups is undoubtedly abnormal. For this reason, net increment figures should be evaluated with due consideration for probable cause of their fluctuation.

Gross increment, on the other hand, is in itself a comparatively stable figure—particularly for basal area and cubic volume measures. Thus, greater reliance may be placed on volumetric comparisons involving gross increment, which is the sum of net increment and mortality.

On the basis of unpublished normal yield tables for Western hemlock, the 12 study plots are for the most part understocked in both number of trees and volume per acre. Nevertheless, many of the plots that are understocked in number of trees approach hemlock yield-table stocking in terms of basal area and cubic volume.

Volumes and basal areas for three plots even slightly exceed yield-table values. During the period from 1951 to 1956, cubic volume on seven plots moved closer to the tabular values. This tendency for the plots to grow toward "normal" or "full" stocking is evidence that natural stands tend toward some central value despite wide variations in stand density.

High Potential

It seems reasonable to assume, in conclusion, that the study plots are fairly representative of the stands in which they occur. Also, it is obvious that Western hemlock is an immensely productive species upon the high sites to which it seems particularly suited. However, broad generalizations based upon these growth plots should adequately recognize the variables of site quality and stocking that profoundly affect yields over sizeable areas.

Have you been guilty of underrating the potential yield of this valuable species? Now may be the time to take another look.

[1]McArdle, Richard E. The yield of Douglas-fir in the Pacific Northwest. U.S. Dept. Agr. Tech. Bul. 201, 74 pp., illus. Rev. 1949.

APA Forms Western Technical Committee

Pulpwood chips, their production, measure and handling, will be themed when the first meeting of the American Pulpwood Assn's. Western Technical Committee is held Dec. 9 at the Sheraton-Palace Hotel, San Francisco.

Tom N. Baker, St. Regis Paper Co., Jacksonville, Fla., lead-off speaker, will talk about the Southern chip program. Other speakers are L. J. Forest, Rayonier Inc. (transporting chips by rail); Henry Baldridge, Publishers Paper Co., Portland, Ore. (transporting chips by truck); John B. Fery, Cascade Kraft Corp., Walla Walla, Wash. (unloading chips from railroad cars); Phil Simcoe, Crown-Zellerbach Corp., Port Townsend, Wash. (storing chips in outside piles); Edmund Ericksen, Georgia-Pacific Paper Co., Toledo, Ore. (reclaiming chips); H. W. Freed, Longview Fiber Co., Longview, Wash. (chip compaction); R. O. Beatty, Western Kraft Corp., Portland, Ore. (chip specifications). Jim Hensel, APA forest engineer, will show slides of a Northeastern chip concentration yard.

A round table discussion will feature units of chip measurement.

International Timber Meeting

The first meeting of the timber industry sponsored by the ILO (International Labor Organization), is scheduled for Dec. 9, 1958 in Geneva, Switzerland. Delegates are expected from 24 countries.

Topics will include a report on a general survey of the industry on a world-wide basis; manpower problem; accident prevention; condition of work and workers welfare in logging camps and labor-management relations. An early report of the conference will be featured in PULP & PAPER.

Simplicity Is Word for New Woodroom

When Hudson Pulp & Paper added a tissue mill to its operations at Palattca, Fla., this necessitated expansion of woodyard facilities.

Chips for old and new mills are unloaded at the same site. Arriving by either truck or rail, they are dumped into a live-bottom pit which empties onto a dragline. That in turn dumps the chips onto a rubber belt conveyor for delivery to storage. A Hydro-Flex rising platform is used to dump chip trucks. Boxcars are unloaded by lift truck. Hopper cars dump directly into the pit.

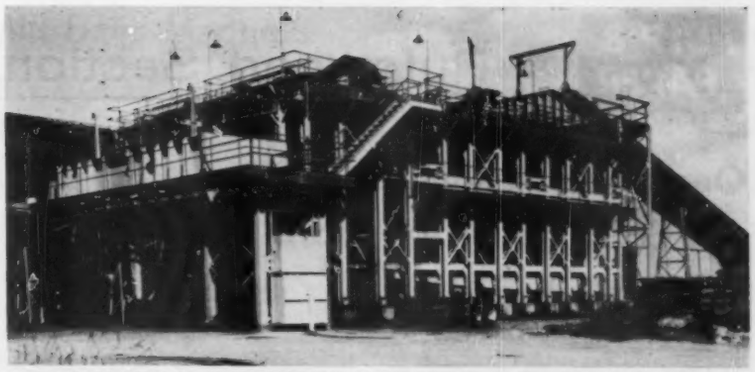
Simplicity is the keynote of the new woodroom. It is served by a 236 ft. Montague single strand chain conveyor which is loaded by two giant cranes, a Lima and a P&H. The logs are dumped into two Fibre Making Processes M-bar drums which have three sections instead of the usual two. (The drums, 12 by 67½ ft., have two dry sections instead of one.) Hydraulically operated lift gates control the flow of logs from each. Debarked logs are dumped to a rubber belt conveyor which runs at a 90-degree angle to the drums. Extra-size logs can be lifted from the conveyor by a one ton Ford Whippet and dropped on the chute of a Carthage log-splitter, directly adjacent to the conveyor. Split logs drop to a single-strand chain conveyor which carries them back up and dumps them into the debarker.

Okayed logs drop into the 88 in. Carthage 10-knife chipper, which is powered by a General Electric motor. Chips go by flight conveyor to two Taylor Ty-Rock screens. Rejects are hammered through a Waterville crusher and accepted chips go to one of three 204-ton Stebbins chip silos, a stone's throw from the woodroom.

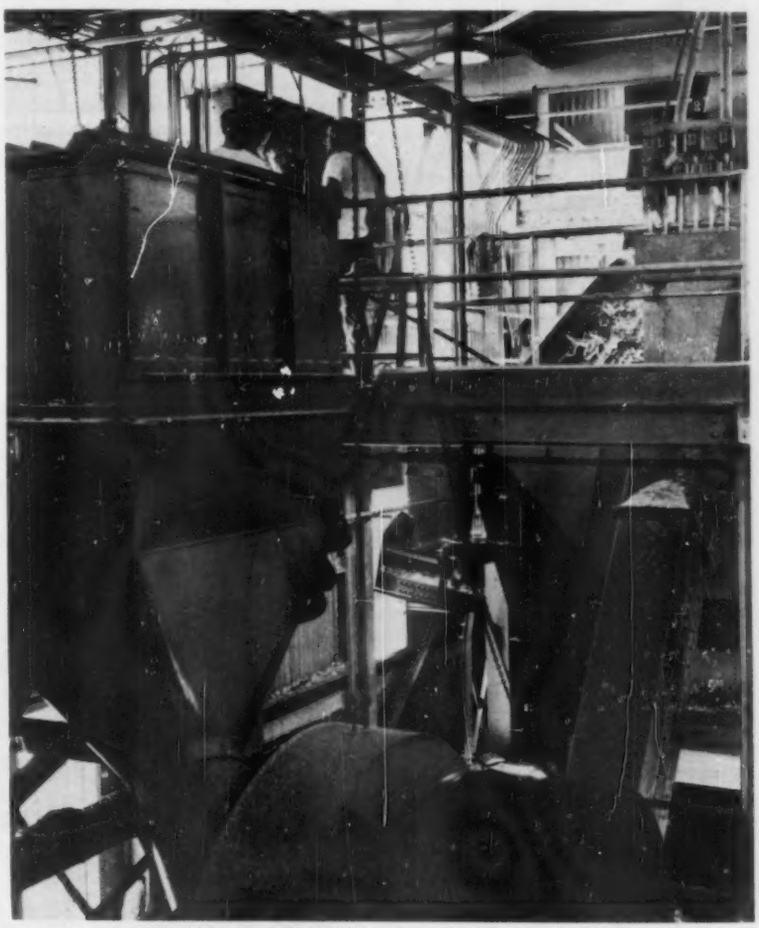
The intricate Stephens-Adamson conveying system is worth noting. Three parallel conveyors carry bark from under the barkers and drop it to a conveyor directly feeding a hopper to the new Wickes bark boiler. The boiler has automatic controls with a manual flow control for oil to make up deficiencies in bark. Feedwater is also automatically controlled.

Conveyors also carry chips to the top of the silos for storage. Each of the silos discharges onto a single conveyor which carries the chips through a corrugated steel shed, where they are weighed, before taking them to the fourth floor of the digester room for cooking. The woodyard and conveyors are so located that duplication of conveying is prevented and both bark and chips can be delivered to their respective destinations in an almost straight line.

(Story of Hudson tissue mill and other additions is published in forward section of this issue.)



TUMBLING LOGS GET EXTRA TREATMENT. These Fibre Making Processes debarkers are extra long, contain two dry sections instead of usual one. Three sections in all add up to 67½ ft.



INSIDE HUDSON'S WOODROOM. Overall picture shows efficient setup. Left is Carthage chipper. Chips go by flight conveyor (right) to screens (rear). Rejects are hammered to size in Waterville crusher, between flight conveyor and screens.

PULP & PAPER

Pulpwood Section

One Good Headline Deserves Another! 6.7 Cords/Acre/Year is Still Sensational

An unfortunate error compounded in all the published reports of a paper on European poplar groundwood and semi-groundwood, which was a feature of the International Symposium on Hardwoods in Montreal in September, has been corrected by the author, Prof.-Dr. Walter H. Brecht, head of the paper manufacturing section of Darmstadt Technical University, Darmstadt, West Germany.

His statement that poplar in some areas of Europe averages 25 or more cords per acre growth per year was in error and should have been stated as 3.7 to 6.7 cords/acre/year, according to word direct from Dr. Brecht himself. Apparently this was an unfortunate error in translating metric measure of wood to cords or of land area to acres, and possibly both.

A PULP & PAPER editor was present at the Montreal meeting when Dr. Brecht very expertly presented his paper. Regardless of this change in figures, he definitely established that sensational growth results of poplar are being achieved in Europe and success of new pulping methods may revolutionize the pulp industry on the European Continent. He predicted poplar would provide new sources of pulp supply in countries now short of domestic fiber resources.

Actually, there have been other reliable reports of 7 to 9 cords/acre/year growth of poplar in the Po Valley of Italy.

When Dr. Brecht mentioned 25 or more cords growth, it was challenged from the floor, and it was suggested an error had been made in converting from European to English units of measurement. There was some further discussion, but Dr. Brecht was not in a position at the moment to concede any error. In view of previous fantastic reports of poplar growth from Europe, there was some inclination to accept his figure. The session chairman, Dr. W. Howard Rapson, however, did describe the 25-cord figure as "incredulous," as did PULP & PAPER in its report.

"Italy is producing practically its total requirement of groundwood from poplar—at least for newsprint," said Dr. Brecht. "She has made her need a teacher. Disease resistant species have been grown and to achieve a fast rate of growth, the young seedlings are well cared for in beds and after two years are planted out. Total yield is about 300,000 cords per year, one third being used for paper. For groundwood, poplars *canadensis* and *caroliniani* are preferred."

While one official of the Montreal meeting said that PULP & PAPER "quite properly headlined" the statement regarding 25 cords growth per year, it was suggested that prominence be given to this correction, too, or else North American foresters might be called upon to meet "the challenge of growing about one inch per year per height on trees packed as tightly together in a forest as logs are in a stacked pile of wood, which is what 25 cords/acre/year represents."

There is no doubt the 25-cord figure is going to float around in the literature of this industry as long or longer than radioactive dust remains in the stratosphere from atomic explosions. But perhaps this prominent correction of an otherwise masterful and highly interesting paper (see Nov. PULP & PAPER) will help to offset that prospect.

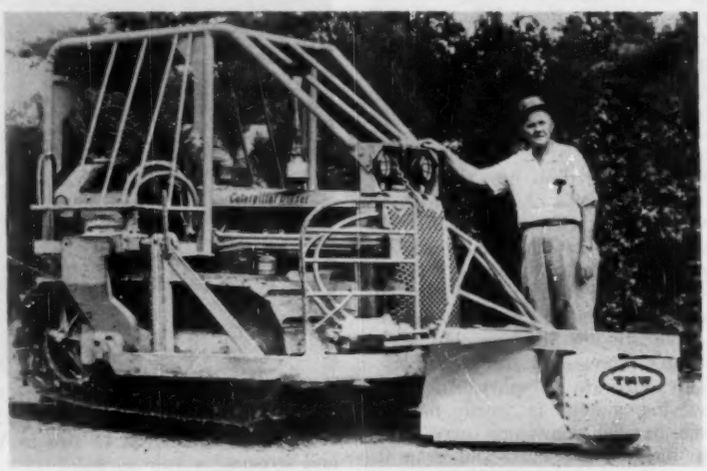
"Forest Fire Control Aid" Available from USFS

"Forest Fire Control Aid," by O. P. Cramer and published by Pacific Northwest Forest & Range Experiment Station, Portland, Ore., (Research Paper 28), a 33-page report, will be useful to industry men dealing with predicting burning conditions. It explores the practicability of using several tabular and graphical aids for converting area forecasts and local observations of relative humidity and wind speed into predicted values for individual fire-danger stations.

Actually tested were (1) aids for adapting area forecasts to wind speed and relative humidity, (2) a procedure for predicting wind speed, (3) aids for the use of predicted relative humidity and forecasting fuel moisture, and (4) routine statistical procedures for predicting wind speed, fuel moisture, relative humidity and burning index class.

Seedling Fertilizer on Market

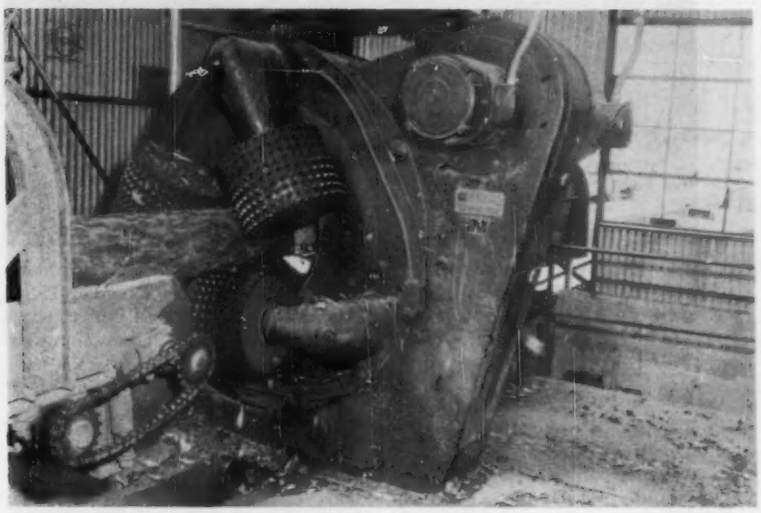
Crown Zellerbach (Camas, Wash.) has developed a fertilizer pellet for forest seedlings, has licensed Mora Chemical Corp. (Seattle) to manufacture it. The pellet is about ¾ in. in diameter, contains slowly soluble urea formaldehyde resins and superphosphate. It is dropped into the hole when a seedling is set out, and dissolves very slowly—causing no burns. CZ reports that seedlings set out with pellets this year grew 60% more than those without. Cost of pellet fertilizer: less than $10/acre.



"Timber Growers' Dream" is Valuable Conservation Tool

With this sturdy front-mounted plow, timber growers can construct and maintain fire lines more efficiently and at lower construction cost, says the manufacturer, Taylor Machine Works, Louisville, Miss. The plow itself can be steered from the cab of the tractor (a Caterpillar diesel in this picture) and the operator can select the best line of travel for the line and follow it quickly and easily.

Supplier for Camden Mill Uses Magnets



DEBARKING LOGS WITH 26-IN. SODERHAMN CAMBIO at Ozan Lumber Co. sawmill facilitates high recovery of plant residue wood in form of clean pulp chips.

An important chip supplier of the International Paper Co. mill at Camden, Ark., is the Ozan Lumber Co., of Prescott, Ark. This mill, in the throes of modernization over a number of years, is highly automated. Ozan Lumber is headed by James R. Bemis, president, a nationally known figure in the industry.

A conveyor trough with belt in the bottom runs across the entire sawmill and delivers all residual matter to a Soderhamn H-F 60 chipper with 10 by 16 in. opening. It is direct driven by a Reliance Electric and Engineering 100 hp, 1175 rpm motor. It produces a carload of chips about every four hours, about two a day.

Logs are barked by a Soderhamn 26-in. Cambio debarker which is housed in a special all-steel and concrete building. It is fed at 47 to 94 fpm. After debarking, a Soderhamn metal detector is used. This has a ceramic ring covering three coils of wire all in balanced magnetic fields. As metal enters, the magnetic field is increased in the first ring, causing an unbalance with the other fields. This sets off a sound warning and dye is automatically sprayed on the log. These logs are kicked off to the right of the conveyor.

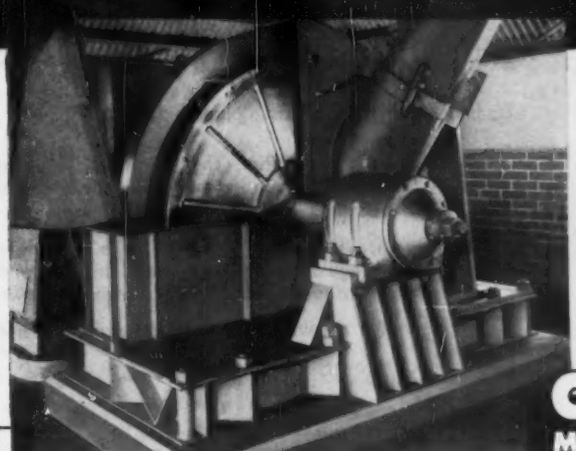
The Soderhamn equipment is supplied by Soderhamn Machine Mfg. Co., Talladega, Ala.

Ahead of the chipper is a Dings metal detector which operates with one coil, maintaining a constant magnetic field.

Chips are screened on a 5 cords per hr. capacity Soderhamn screen. Accepted chips are conveyed to a siding by a Continental Gin Co. conveyor and an Allied Sheet Metal blower system. A Phelps blower blows chips into the box cars.

Uniform, Clean-Cut CHIPS

MINIMUM { Fines, Bruising, Maintenance



CARTHAGE NORMAN CHIPPER is famous for the unique variable angle of grind of the knives and helicoidal disc segments which pull the log in at exactly the correct rate for clean, sharp chipping at all points along the cutting edge.

Consequently, at least 70% of the chips are of the specified length. There is practically no bruising and no sawdust, resulting in greater yield of higher-strength pulp. Rugged construction results in exceptionally low maintenance costs. Write for Bulletin CNC-2.

◀ Chipper with top of hood removed showing helicoidal disc segments and knives with variable bevels.

CARTHAGE MACHINE COMPANY CARTHAGE, NEW YORK

Manufacturers of Log Barkers, Log Splitters, Log Chippers, Slab Barkers, Slab Chippers, Chip Screens

John W. Rogers, Carthage, N. Y., Ph. 1755
Ed Crowley, Atlanta, Ga., Ph. POplar 6-9858
M. A. Bell, Box 490, Birmingham, Ala., Ph. LYric 2-1042
R. K. Strapp, 1645 Blvd. Ed. Laurin, Montreal, Que., Ph. RIverside 7-5103
Ray Smythe Co., 511 Park Bldg., Portland, Ore., Ph. CApital 3-2238

New Truck-Cranes Announced

Three new truck-cranes, capable of handling up to 200 ft. of boom and jib, have been announced by Link-Belt Speeder Corp. The 40-ton HC-108A will lift and handle, unassisted, 200 ft. of the optional "Hi-Lite" tubular boom and jib, while the 35-ton HC-98A and 30-ton HC-88A handle 1^0 ft. and 160 ft. respectively.

The three Zephyrcranes offer many specialized lifting crane features resigned to tailor the machines to any job requirements. Among these are Speed-o-Matic power hydraulic controls, reversing clutches for either or both main drums, independent rapid boomhoist with boom lowering clutch, pin connected crane boom, swing brake, retractable high gantry and hydraulic counterweight removal jacks. A 12-page catalog for each model can be obtained from Link-Belt Speeder distributors or Link-Belt Speeder Corp., Cedar Rapids, Iowa.

Largest Arm Barker

What is believed to be the largest hydraulic arm barker on the Pacific coast—a 70 in. unit built by Hansel Engineering Co.—has been installed in the woodroom of Crown Zellerbach Canada's Ocean Falls Division.

BIG TREES IN THE CORN COUNTRY . . . Huge specimens of hardwoods going into semichemical pulp and board at the Crandon Paper Mills, Ind., Fort Madison, Ia., which was a former straw mill, converted to woodpulping. George H. McGregor, general manager, stands alongside these woodyard giants.

Bark Burner Solves Pollution Problem

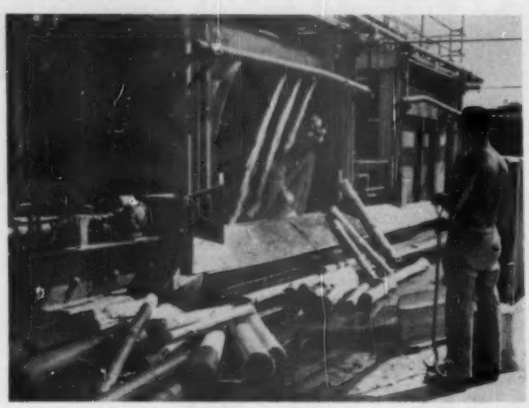
The Windsor Mills, Que., plant of Canada Paper Co., a subsidiary of Howard Smith Paper Mills, has solved a river pollution problem by installing facilities for burning bark.

Prior to installation of the burner, which consumes 150,000 lbs. of dry bark every 24 hours, it was necessary to deposit the bark in the St. Francis River.

D. S. Abbott, president of Howard Smith Paper Mills, says the program has included "reduction of mill effluent, neutralization of the effluent which cannot be avoided and the bark disposal project. Bark is transported by conveyor belts through a straining process to reduce moisture content, then deposited in a big Dutch oven where temperature reaches 2,200° F."

The installation generates 600,000 lbs. of steam every 24 hours, allowing its use in plant processing. To insure continuous activity of the boiler in the event of bark shortage, supplementary oil burning equipment has been installed.

F.M.P. COMBINATION DRY-WET BARKING DRUMS DEBARKING HARDWOODS FOR



Barking drums installation at Hudson Pulp and Paper Corp.

HUDSON PULP & PAPER CORP. NEW TISSUE MILL, PALATKA, FLA.

Equipment furnished for tissue plant expansion:

2—F.M.P. 12′ x 67½′ M-bar, chain-suspended barking drums, each drum consisting of 2 dry sections, and 1 wet discharge section for washing wood

2—F.M.P. vertically-operated barking drum discharge gates for regulating amount of wood in drums and for keeping drums running, if any conveyor is down

4—F.M.P. digester circulating and indirect heating systems

1—Blow-heat recovery system

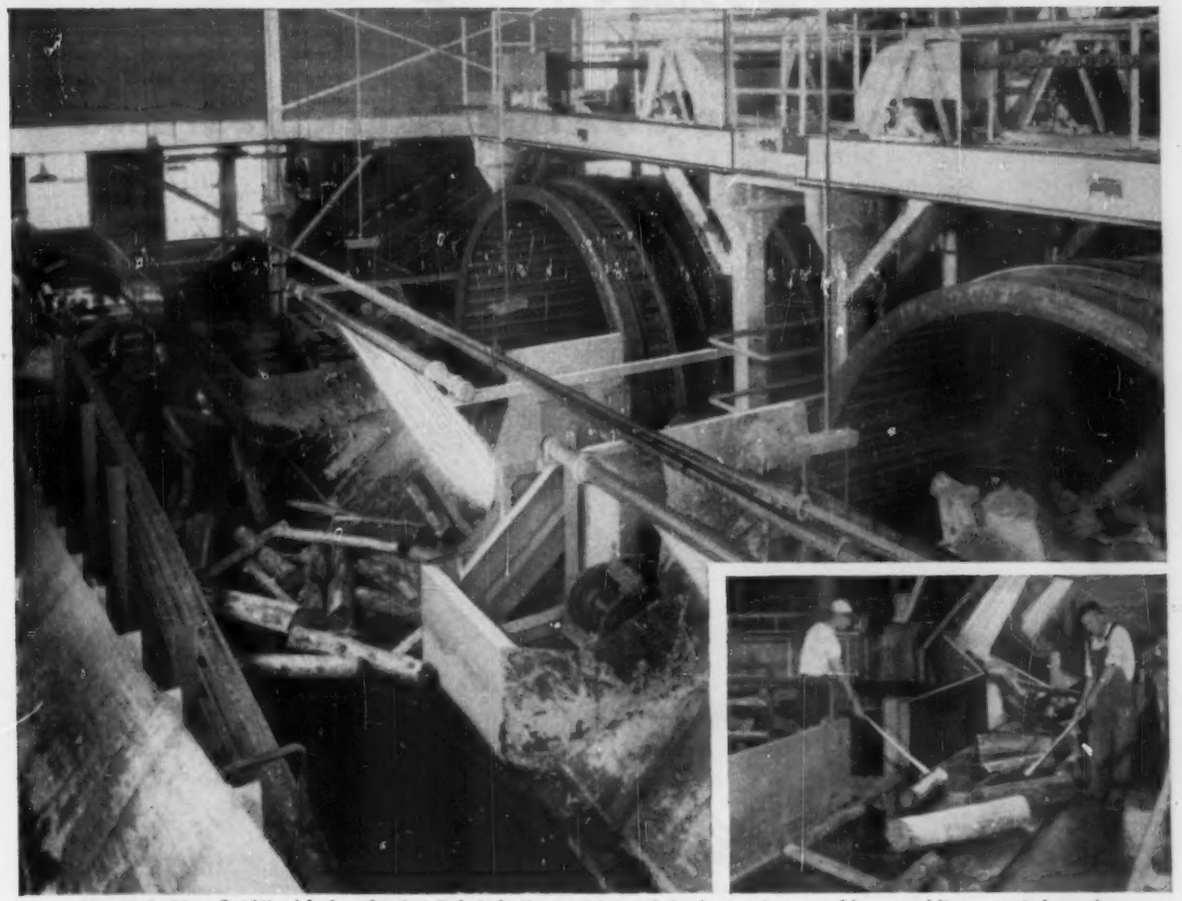
FIBRE MAKING PROCESSES, INC.

Manufacturers of barking drums since 1915

Tribune Tower, Chicago 11 **Russ Bldg., San Francisco 4**

US RUBBER Conveyor Belts

Logging a new record!



This U. S. Giant® 60" wide Log Sorting Belt is built to withstand the heavy impact of logs tumbling onto it from the debarking drums (left) and to resist the sharp points of the pickaroons which the men use to sort out rejects (right).

When the Mosinee Paper Mill Company, Mosinee, Wisconsin, required a conveyor system to step up production of wood and pulp, they turned to the company that had helped with the same problem on many installations in the United States and Canada—U. S. Rubber.

"U. S." engineers studied the requirements, the mill layout, and—above all, the problem of costs. Eight "U. S." conveyor belts were installed, made endless on the job. Production went up to a new record for the log-sorting operation of Mosinee Mills.

The easiest and most economical way to increase haulage and to lower costs is to enlist the services of United States Rubber conveyor belt engineers. Their wide and varied experience in materials handling for the wood products industry allows them to give you the very best help obtainable.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and the finest quality industrial rubber products.

US RUBBER Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

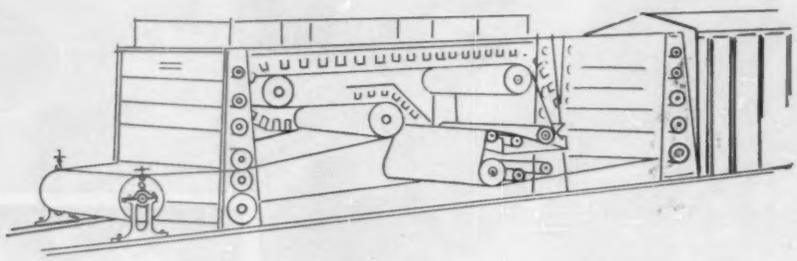
Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

Your Attention, Please!

HIGH SPEED COATER-DRYER DESIGNS

FOR YOUR {ON MACHINE / OFF MACHINE} PROJECT

High speed coating, with its complementing high speed drying, is no job for the inexperienced. Those who have lived with these operations for years are, by far, the best qualified to help you on such a project.



WALDRON *offers* an experience in coating and other types of paper converting that goes back *many, many* years. Waldron's is an experience unequaled in industry today. High speed coaters, handling a wide range of viscosities, are well within the scope of Waldron Service.

ROSS *offers* an experience in drying paper and other webs that goes back to the early twenties. The hundreds of Ross Dryers in a variety of types already in service suggest, too, an experience unequaled in industry today. Ross experience in utilizing high air velocities and high temperatures makes it the logical choice to engineer the dryer for coater speeds up to 2000 fpm or even higher.

With this trend toward high speed and heavier coatings becoming more urgent, we suggest jointly that you discuss your coater-dryer requirements, either 'on machine' or 'off machine', with our engineers. Their respective experiences and 'know-how' should be very helpful to you in finalizing your plans.

M-R

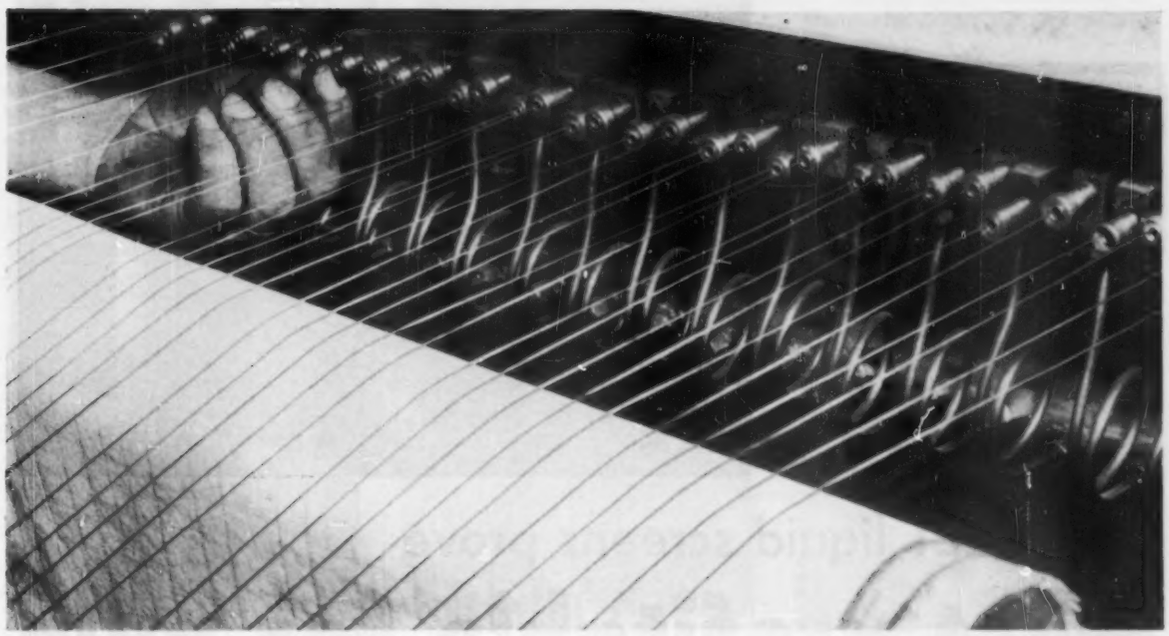
THE MIDLAND-ROSS GROUP OF COMPLEMENTING SERVICES

J. O. Ross Engineering, New York
John Waldron Corporation, New Brunswick, N. J.
Andrews and Goodrich, Boston
Ross Engineering of Canada Limited, Montreal
Ross Midwest Fulton, Dayton
Hartig Extruders, Mountainside, N. J.
Cornes Ross Engineering Company, Ltd., England

JOHN WALDRON CORPORATION
Subsidiary of Midland-Ross Corporation
NEW BRUNSWICK, NEW JERSEY
CHICAGO • LOS ANGELES
WEST COAST REPRESENTATIVES: Bojanower Machinery Service Co.
5270 East Washington Boulevard • Los Angeles 22, California

J. O. ROSS ENGINEERING
Division of Midland-Ross Corporation
444 MADISON AVENUE, NEW YORK 22, N. Y.
ATLANTA • BOSTON • CHICAGO • DETROIT
LOS ANGELES • SEATTLE

These strands of wire emerging from the tubes of the annealing furnace have a new, different personality. Annealing is an important factor in determining the physical characteristics of wire. Tensile strength, resistance to wear, flexibility are *built-in* by carefully-controlled annealing temperatures and speeds. Wire is tailor-made for its specific application . . . another reason why Appleton wires are good wires.

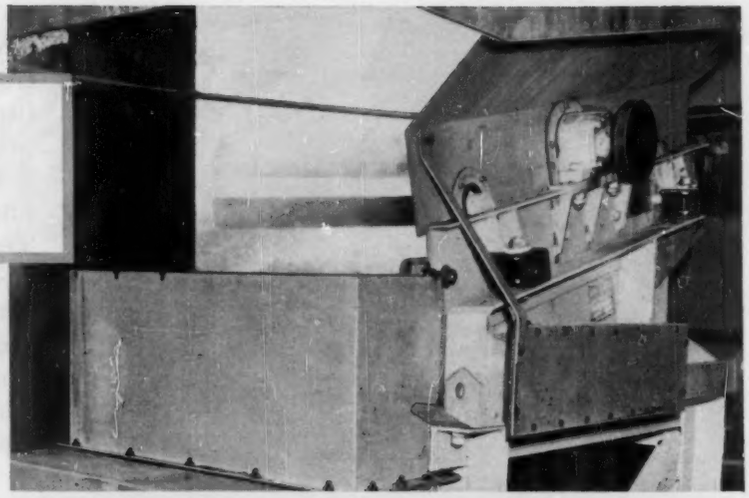


Appleton's eight annealing furnaces operate around-the-clock turning out over 100 combinations of alloys, wire sizes and tempers . . . exclusively for use on our own Fourdrinier wire weaving looms. Ask your Appleton Wire Works representative how this versatility can be put to work for you.

Appleton Wires are Good Wires

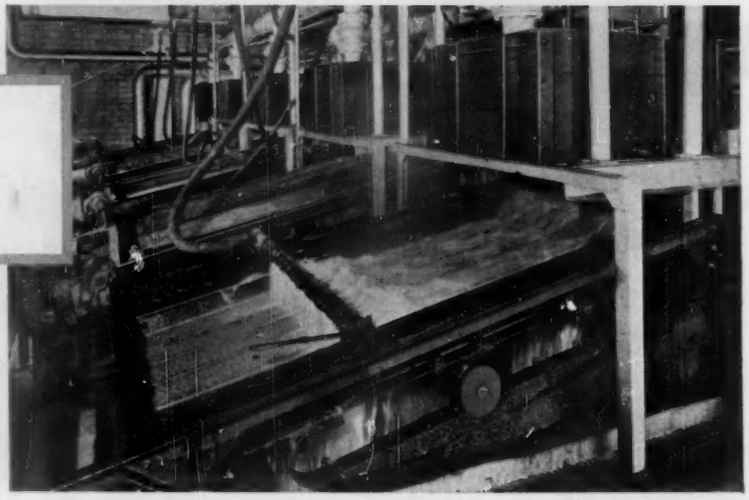
Appleton Wire Works, Inc. Plants at Appleton, Wisconsin and Montgomery, Alabama / International Wire Works, Menasha, Wisconsin

For low-cost **DEWATERING**



UNION BAG-CAMP PAPER CORP. uses 6 Link-Belt liquid vibrating screens to dewater unwashed and unrefined semi-chemical pulp at its Savannah (Georgia) plant. Each screen consistently processes over 50 tons a day. Dewatering of the neutral sulfite semi-chemical pulp before it is refined cuts horsepower requirements of refiners in half.

For efficient **RECOVERY**



RECLAIMING PULP PARTICLES from large volumes of water is a fast, economical operation with Link-Belt liquid vibrating screens. Five screens at right are recovering pulp from factory white water. Each is equipped with a power-propelled traveling spray. Both dewatered pulp and clarified water are returned to system for re-use.

LINK-BELT liquid screens prove **most profitable for pulp**

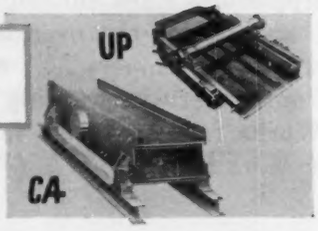
Throughout the paper industry, Link-Belt liquid vibrating screens are helping mills get "extra profits" out of pulp production. They hold dewatering costs to a minimum . . . reclaim salvageable waste quickly and economically . . . enable mills to avoid stream pollution.

Because of a special deck design, Link-Belt liquid vibrating screens can be equipped with very fine screen cloth. This feature, plus the high-frequency, small-amplitude vibration produced by a fully enclosed, self-aligning roller bearing vibrator mechanism, assures maximum solids retention . . . maximum liquid passage.

You can get expert counsel on any screening problem by calling your nearest Link-Belt office. Or write for Books 2377-A and 2554.

S4.726

. . . and for thorough **CHIP SCREENING**



FAST BED STRATIFICATION in high-capacity screening is achieved with Link-Belt "CA" vibrating screens. "UP" screens assure equal efficiency on low-capacity jobs.

LINK-BELT

VIBRATING SCREENS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World.

NEWS NOTES FORM INDUSTRY ASSOCIATIONS

Va.-Carolina TAPPI Announces Program for December Session

Virginia-Carolina section of TAPPI will hold its last meeting this year on Dec. 5 at the Thomas Jefferson Hotel in Richmond, Va., according to Robert E. Bowen, gen. supt. of Continental Can Co. at Hopewell, Va., chairman.

The program includes talks on continuous pulping by Frank Vaughn, consulting engineer, Richmond, and Dr. R. C. Sproull, manager of technical services, Phillip Morris and Co., Richmond; screening kraft stock in black liquor by R. W. Eagner, asst. pulp mill supt., Continental Can Co., Hopewell, Va.; and fire prevention in the industry by M. M. Batzer.

The first meeting in 1959 will also be at the Thomas Jefferson, date to be announced. In May, the group will meet at Franklin, Va., with Union Bag-Camp as host. R. F. Miller, pulp mill supt. of Continental Can, Hopewell, is vice-chairman and J. L. Baker, Albemarle Paper Mfg. Co., is secy-treas.

Carpenter Downing

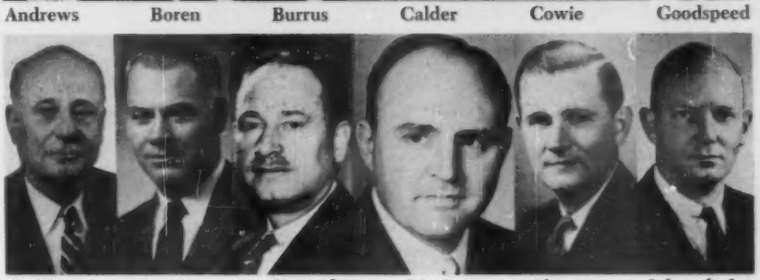
Elected to Head Fibre Box Assn.

CHARLES H. CARPENTER, v.p., Kieckhefer-Eddy Paper Div., Weyerhaeuser Timber Co., is newly elected president of Fibre Box Assn. GEO. B. DOWNING, pres., Downing Box Co., was elected FBA vice president. Mr. Carpenter succeeds W. W. JACKSON, Hoerner Boxes, Inc., and Mr. Downing succeeds P. F. PAUL, The Flintkote & Co.

Gulf Coast TAPPI Hopes To Get Charter at May 15 Meeting

The newly organized Gulf Coast section of TAPPI hopes to make its May 15 meeting in New Orleans a "big meeting" at which it will receive its TAPPI charter, according to J. E. Doyle, chief chemist, St. Regis, Pensacola, chairman. The section will meet Jan. 16 at the Hotel Stafford in Tuscaloosa, Ala., and on March 13 at the Battle House in Mobile.

Andrews Boren Burrus Calder Cowie Goodspeed



Int-Hout Jennings Kennedy Morian Olsson Schoenhofen

Elected by National Paperboard Association

. . . to serve another term as directors are: J. N. ANDREWS, exec. v.p., Ohio Boxboard Co., A. RODNEY BOREN, v.p., The Mead Corp.; GEORGE M. BURRUS, v.p. United Board & Carton Corp.; ALEXANDER CALDER JR., pres., Union Bag-Camp Paper Corp.; J. B. COWIE, gen. sales mgr., H & W Div., Scott Paper Co.; W. S. GOODSPEED, pres., American Box Board Co.; DAN INT-HOUT SR., v. p., Michigan Carton Co.; WILEY L. JENNINGS, v. p., West Virginia Pulp and Paper Co.; J. R. KENNEDY, pres., Federal Paperboard Co.; CLARK H. MORIAN JR., v. p., East Texas Pulp and Paper Co.; STURE G. OLSSON, pres., The Chesapeake Corp. of Va.; and LEO H. SCHOENHOFEN, senior v.p., Container Corp. of America. Colleges are listed for all these gentlemen except one, presumably a graduate of the highly respected College of Hard Knocks. An interesting array: Wittenberg; Kenyon; Illinois; Dartmouth and Harvard B.A.; Michigan; Chicago Art Institute; Virginia Polytech; N.Y.U.; Haverford; Virginia, Wisconsin and Northwestern.

Miller Dyke

WEST COAST MEETING of National Council For Stream Improvement brought commendations from state sanitary authorities for industry's accomplishments and notification that sterner control regulations for public waters are "in the making." GEORGE E. MILLER, res. mgr. Columbia River Paper Mills, was session chairman. GEORGE E. DYKE, vice chm., Continental Can Co., addressed group as chairman of the National Council.

Murphy of Box Assn. Retires

Top execs of the Folding Paper Box Assn. met in Phoenix, Ariz., to honor A. EDWARD MURPHY, retired after 25 years as executive director of the organization. NORMAN F. GREENWAY, of Continental Can, and past president of FPBA, presented him an inscribed silver tray. Mr. and Mrs. Murphy will live in Clearwater, Fla., and Solon Springs, Wis.

McDonald ... Attshuler ... Coatsworth

Mill Men Frolic

The 23d annual Paper Mill Men's Club Hi-Jinks was held last month at the Lakewood Country Club, Long Beach, Calif., by the Los Angeles area mill men's organization. About 450 members and guests sat down to the banquet that closed a full day's festivities.

Golf winners were: Distributors—first flight, Harold Solomon, U.S. Hardware & Paper Co.; second flight, Herbert Benson; third flight, Jack Rogers, Blake, Moffit & Towne. Mill men—first flight, Bill Ward, Powell River Sales; second flight, Charles Casas, Certified Paper Converting Co.; third, Ansel Ernst, retired. The Philbrook Perpetual Trophy was won by Jim Campbell of Kimberly-Clark, who also got a permanent trophy.

The frolic was managed by General Chairman Reuben Coatsworth of Potlatch Forests. Mill Men's President Richard A. McDonald welcomed guests, and L. Stern Altshuler, Zellerbach Paper Co., accepted for merchants.

Strictly Personal

Dictionary of Pulp and Papermaking Terms

By Curtis L. Brown

Beater—But not too hard
Couch rolls—Don't let that disturb you.
Doctor blade—Surgeon's scalpel
Finishing department—Powder room
Holocellulose—Drinking straw
Optical brightening agents—Women
Packing—"I'm going home to mother!"
Tall oil—Texas petroleum

Midwest

Memo from DGC

DR. ROY P. WHITNEY was elected as an additional vice pres. of The Institute of Paper Chemistry. Dr. Whitney, who received his sc.b., sc.m. and sc.d. degrees from Massachusetts Institute of Technology, joined the Institute in 1947. He became dean in 1956 and will continue in that office. Re-elected as officers of the Board and the Institute were: W. IRVING OSBORNE JR., chairman; DAVID L. LUKE, vice chairman; JOHN G. STRANGE, pres. and treas.; HARRY F. LEWIS, vice pres.; WENDALL H. SMITH, secy; ERNST MAHLER, honorary chairman; and WESTBROOK STEELE, pres. emeritus. . . .

Champion Paper and Fibre Co., Hamilton, O., announced appointments to newly created positions: JACK MOORE JR. becomes asst. gen. mgr., paper distribution div., under H. W. SUTER, sr. vice pres., marketing, and gen. mgr., paper distribution div. MALCOLM MCDONALD is asst. gen. mgr., paper converting div., under HENRY W. RIGBY, exec. vice pres., corporate development, and gen. mgr., paper converting div. LEONARD B. VISSER was named director of personnel policy in paper distribution and paper converting. Another member of Champion's staff, LEWIS CLARK THOMSON, admin. vice pres. and secy., was elected pres. of the Ohio Mfrs. Assn. . . .

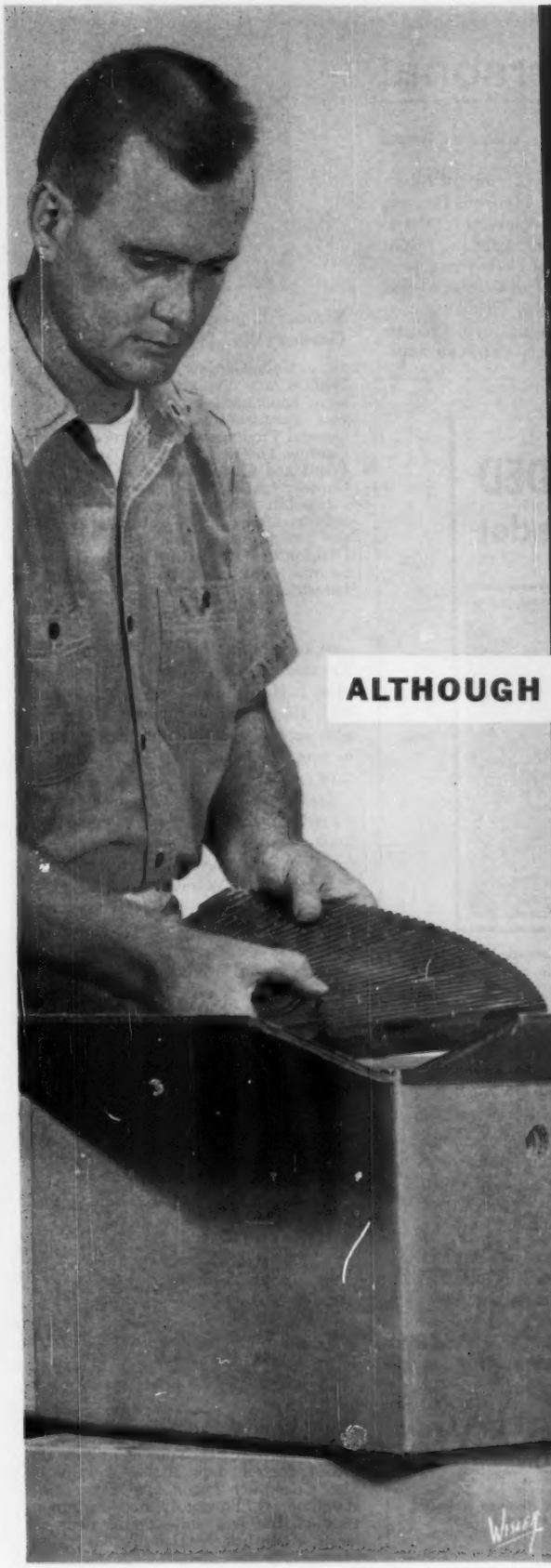
CYRIL RAUSCH, res. mgr. of Hennepin Paper Co., Little Falls, Minn., was named vice pres. i/c mfg. and elected a director. Mr. Rausch joined the mill in 1944 and became res. mgr. of the paper mill in 1955. . . . A. RICHARD LENEGAN joined Nekoosa-Edwards Paper Co., Port Edwards, Wis., as asst. market research mgr. Mr. Lenegan is a 1951 graduate of Loyola U. . . . JOHN J. MCDONOUGH, pres. of Georgia Pow[illegible] Co., Atlanta, Ga., was

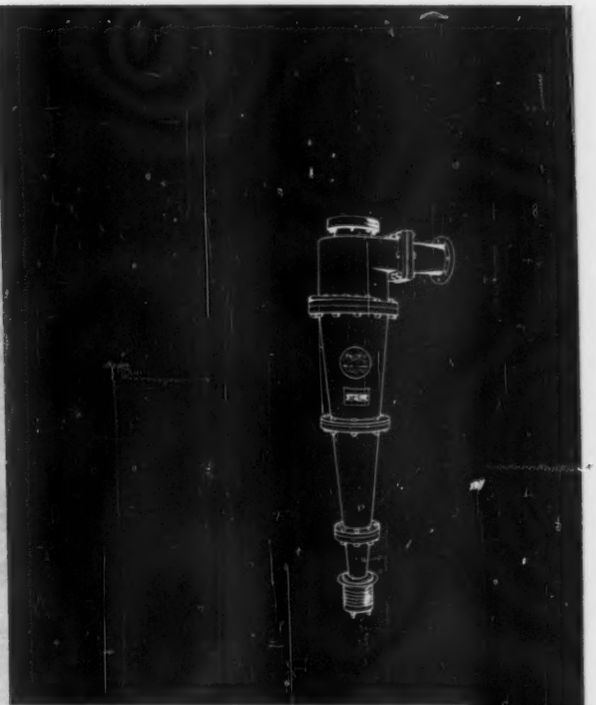
Dr. Ward D. Harrison Is New President of Allied Paper

. . . and chief executive officer of the company's division in Kalamazoo, Mich. In coming to Allied, he resigned as vice pres. and gen. mgr. of production of Riegel Paper Corp. Dr. Harrison worked for Crown Zellerbach and the Northwest Paper Corp. He was also on the staff of Ecusta Paper Corp. He is a director of the Pulp and Paper Foundations at North Carolina State College and the University of Maine and is serving his second term as pres. of TAPPI. He is a graduate of Iowa State College and received his ph.d. from the Institute of Paper Chemistry, Appleton, Wis.

CUSTOM FABRICATIONS

1303 N. RIVER STREET
PORTLAND 12, OREGON
PHONE AT 4-2191





ALTHOUGH HE MAY NOT KNOW IT

The corrugated container that he is packing is stronger and resists damage better because the corrugating medium has been cleaned on Bauer Centri-Cleaners. Corrugating manufacturers are finding extra sales advantages for their product by using Bauer Centri-Cleaners to remove from the pulp chop and foreign particles that weaken the sheet. Write for complete information.

Bauer

THE BAUER BROS. CO.

Burt and Sheridan • Springfield, Ohio

Strictly Personal

elected a director of The Mead Corp., Dayton, O., replacing E. T. GARDNER who resigned after serving on the board for 28 years. . . .

L. P. JONES was elected vice pres. of national accounts at River Raisin Paper Co., Monroe, Mich. . . . R. L. STEELE was appointed special projects leader at the Ahdawagam div. of Consolidated Water Power & Paper Co. EMERY JAGODZINSKI was promoted to finishing room foreman at the firm's Wisconsin Rapids div. . . .

JOHN S. PILLSBURY JR., pres. of Northwestern National Life Insurance Co., was elected a director of Minnesota & Ontario Paper Co., Minneapolis, Minn. . . . NORMAN F. GARRETT was elected vice pres. and gen. mgr. for mfg. of Crane Co., and WALTER KOVALICK was appointed asst. gen. mgr. of the company's Chicago manufacturing div. . . . CLIFFORD SKINNER, supt. of the wax div. of the KVP Co., Kalamazoo, Mich., plans to retire next Mar. 1. He will have completed 36 years with the company. THOMAS FLANAGAN asst. supt. of the wax div., will move up to wax div. supt. when Mr. Skinner retires. . . .

JAMES W. TAYLOR was named to head a newly-organized steam, combustion and instrumentation section of the engineering dept. of Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. NORMAN DIETRICH will serve as asst. steam and combustion engineer and GEORGE DAVIS as asst. engineer for steam distribution in the section. . . . Western Michigan U. expects to award degrees in paper technology to 24 seniors during 1959, the largest graduating group so far in this area, reports DR. A. H. NADELMAN, head of the paper technology dept. . . .

Richard L. Siegel, President, Gardner Div., Diamond Gardner

. . . Colin Gardner, who has been president, is now division chairman. Changes were announced by Colin Gardner III, vice president of Diamond Gardner's General Products Group, which includes Gardner Division, formerly The Gardner Board and Carton Co. Mr. Siegel joined Gardner in 1949 as director of industrial and public relations, became vice pres. of industrial and public relations in 1954, and vice pres. and gen. mgr. of Gardner Division in 1957. Before joining Gardner, he was with International Harvester as industrial relations mgr.

Thurn Named Supervisor

. . . of controls development unit in the process controls dept. at the Ohio div. of The Champion Paper and Fibre Co., Hamilton, O. Previously he was supervisor of the wet end control dept. A native of Wishek, N. Dak., Arthur Thurn has been with Champion for 18 years.

NO CHIP SILOS OR BINS NEEDED
with open storage by Rader

Rader system blows to outside storage piles at Cascade Kraft. Portable pipe extensions permit distribution of chips over large area.

Cascade Kraft, Wallula, Washington, uses one Rader pneumatic conveyor to blow 120 tons of chips per hour from the rail car dump and truck unloading pit to open storage.

When the pulp mill is completed early in 1959, a second system will convey chips reclaimed from open storage through a 4-way valve to cyclones discharging and compacting chips directly into the digesters, also at a rate of 120 tons per hour.

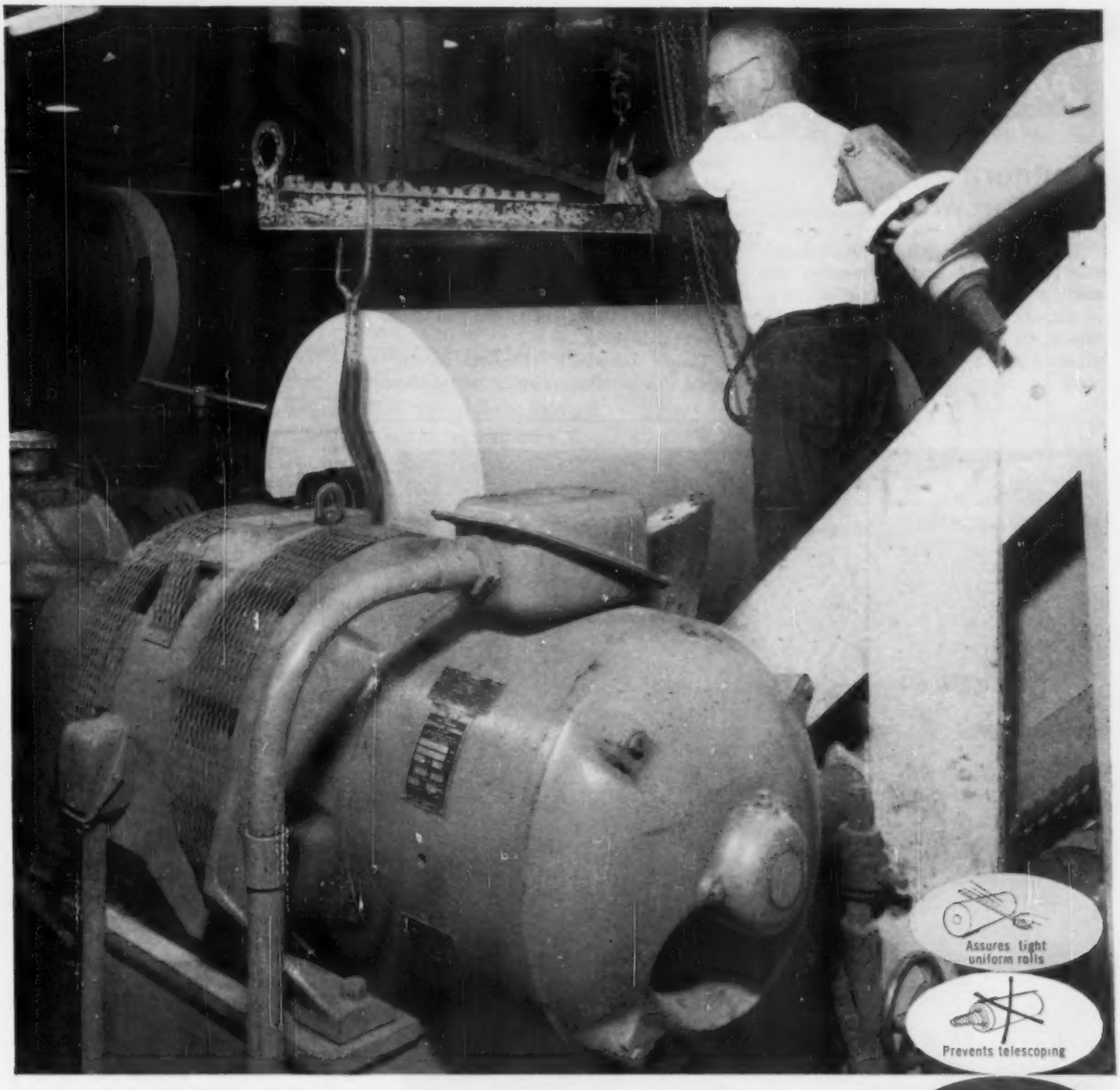
Specification of Rader pneumatic conveyors by Cascade Kraft assures the finest method of chip handling. Rader systems cost less to install, less to operate and maintain.

Write for additional information!

RADER PNEUMATICS, INC.

1739 N.E. 42nd Avenue, Portland 13, Oregon

4645 Main St., Vancouver, B. C.
Preston, Ontario, Canada
Box 61, Eureka, Cal.
Box 55, Lockport, Illinois
Box 3386, Memphis 17, Tenn.
300 1st Ave., Needham Hts., Boston 94, Mass.



A dollar-saving wind-up drive

Louis Allis Ajusto-Spede® provides adjustable speed from A. C. power supply

Wind-up drives with precise tension control can reduce your "broke" and down-time.

Louis Allis Ajusto-Spede® drives have proven successful in eliminating the problems encountered with wind-up drives in all the paper industries from manufacture through printing and converting, and on all types of materials from tissue to board.

Here's what this versatile drive can offer you:

- 1 to 75 h. p.
- Linear speed range from 100 to 2,000 fpm
- Roll build-up ratios up to 15:1
- Controlled tensions from ½ lb. to 10 lbs. per inch of width
- Inertia compensation for maximum acceleration rates
- Adjustable stalled tension for smooth starts

A phone call to your local Louis Allis District Office will bring a skilled Louis Allis sales engineer. He'll gladly study your problem and advise — with no obligation. Or write for Bulletin 611E, "Ajusto-Spede Drives." The Louis Allis Co., 444 E. Stewart Street, Milwaukee 1, Wisconsin.

LOUIS ALLIS

MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE-SPEED DRIVES

PULP & PAPER

Strictly Personal

Southern

Memo from WFD

The Southern Exposure: St. Francisville Paper Co. has arrived "socially," according to a report from West Linn informants. The first pin dinner in the new mill's history was held last month, presided over by R. W. RILEY, asst. res. mgr. ED NUNN, St. Francisville's res. mgr., gave the welcoming address. No other names mentioned—except it was reported that one pin—for five years service—was awarded. . . . KEN THOMPSON is new paper mill supt. at St. Francisville, La. (not Delbert Bush, as we erroneously reported last month. We had Mr. Bush going two places—the right one—Port Townsend, Wash.).

Crown Zellerbach's Gaylord div. reports new promotions at its Atlanta box plant. LEE L. ROSS, formerly southeastern sales mgr., becomes manager of the Atlanta plant and RALPH H. JACKSON moves from asst. supt. to supt. of the plant. GEORGE O. KING, JR., formerly asst. southeastern sales mgr., is now sales mgr. . . . J. A. BOUSQUET is mgr. of Gaylord's newly created southwestern div., with headquarters in Houston, Tex. . . .

A. WALTER AYLES, recently appointed mgr. of Paper Chemicals Dept. of Wica Chemicals, Inc., travels in style throughout the southeastern section—his company has provided him with a new Beachcraft Bonanza. Mr. Ayles is a veteran pilot. . . . St. Joe Paper Co. has won a Million Manhour Safety Award from Liberty Mutual Insurance Co.—a tribute to its sterling record. St. Joe went from Nov. 14, 1957 through June 1, 1958 and racked up 1,044,041 man hours without a lost time accident. . . .

JAMES L. GOOD and DONALD W. MEMORY have joined West Virginia's Covington, Va., staff as research engineers and RICHARD J. KREMER is now on the technical service staff, also as engineer. . . . ROBERT WICKLUND, formerly sales mgr. of the pulp and paper div. of Potlatch Forests, Inc., has been appointed mgr. of East Texas Pulp & Paper's carton board sales.

GEORGE W. MCCLEARY, formerly advertising and promotion mgr. of Olin Mathieson's packaging film operations, has been named sales mgr. of the Ecusta paper operations. He'll work under W. E. (BILL) ZIMMERMAN, dir. of sales and marketing at Pisgah Forest and be in charge of marketing lightweight, Bible, onetime carbon and other specialty papers, many of which will be produced on Ecusta's new No. 10 "Cherokee Arrow" machine. . . . HAROLD J.

Moak Fulkerson

New Posts at Naheola

EARL S. MOAK has been appointed paper mill supt. at Marathon Southern Corp., filling vacancy caused by death of R. S. Williams. JOHN R. FULKERSON replaces Mr. Moak as asst. paper mill supt. Mr. Moak, a native of Bogalusa, La., came to Naheola from Scott Paper Co., in Mobile. At age 14 he started work at Bogalusa Paper Co., later attended college in La. and Ga., and was employed for a number of years at Union Bag in Savannah. Mr. Fulkerson comes to his new position from Marathon research and development division in Menasha, Wis.

This is the back beam of the largest fourdrinier wire loom in the world. Before it begins to weave, weeks must be spent "dressing" it with the wire that will be woven into the cloth that makes paper. Twenty thousand pounds, or 90 MILLION feet of warp wire must be wound carefully on this huge cylinder. Great machines such as these are custom built by Eastwood-Nealley, and their performance is guarded every instant by electronic controls. **This is part of our modernization and automation program designed to benefit the manufacturer of paper.**

EASTWOOD-NEALLEY CORP.
BELLEVILLE NEW JERSEY

Four features that spell recovery unit performance

1. **Panel Type Superheater and Screen**
2. **Tangential Overfire Air**
3. **Decanting Hearth**
4. **Precise Control**

These are design features of the C-E Chemical Recovery Unit. How they contribute to efficiency, economy and flexibility is discussed below. That they blend into an integrated design is evident from the acceptance the unit has received, as indicated by the list at right. Note that the smallest unit listed has a capacity of 1,500,000 lbs. of dry solids—a size unheard of just a few years ago. Note too, that two of the ten contracts are repeat orders.

C-E Contracts for Large Recovery Units
(500 Tons and above)

Name	#Dry Solids/24 Hrs.
Enso Gutzeit OY.	1,500,000*
Union Bag & Paper Corp.	1,610,000*
Halifax Paper Co., Inc.	1,500,000*
B. C. Forest Products Ltd.	1,600,000*
Longview Fibre Co.	2,000,000*
Crossett Paper Mills	1,500,000
International Paper Co.	1,500,000
Enso Gutzeit OY.	1,500,000
Union Bag & Paper Co.	1,610,000
East Texas Pulp & Paper Co.	1,600,000

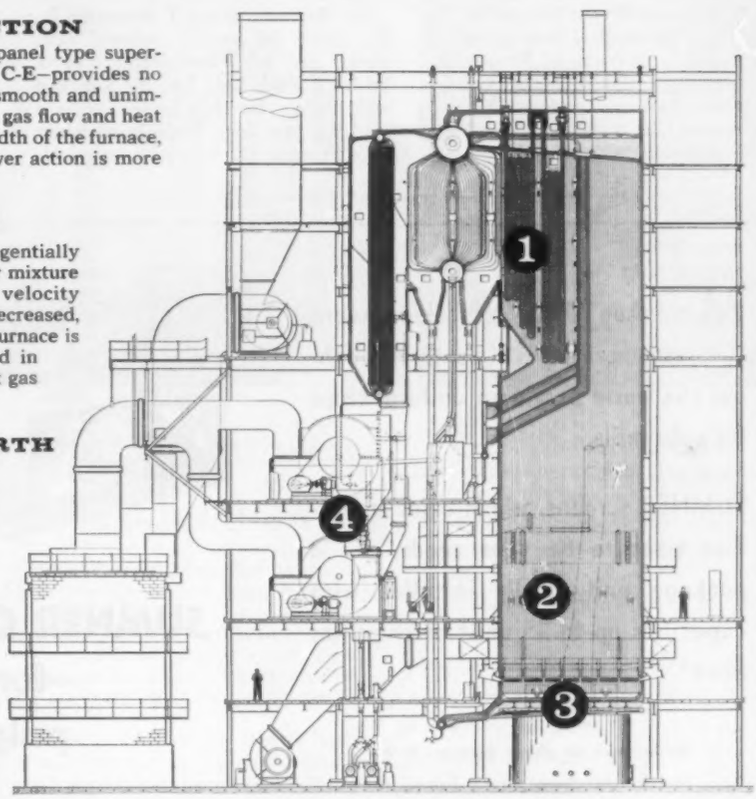
*In service

1. PANEL CONSTRUCTION
The widely spaced self-cleaning panel type superheater and screen—developed by C-E—provides no foothold for slag. Gas passage is smooth and unimpeded. Slag build up is minimized, gas flow and heat absorption is uniform across the width of the furnace, surfaces are cleaner and soot blower action is more effective.

2. TANGENTIAL AIR
Secondary air is introduced tangentially above black liquor sprays. Fuel-air mixture is intimate and complete. Gas velocity upward through the sprays is decreased, ash entrainment in gases leaving furnace is reduced. Combustion is completed in lower part of furnace, furnace exit gas temperature is reduced.

3. DECANTING HEARTH
A layer of chilled smelt is held in contact with the water cooled furnace floor. Molten smelt rides on top of the chilled layer and leaves the furnace without touching hearth refractory or floor tubes. The cost and inconvenience of downtime due to hearth failure is eliminated.

4. CONTROL
Furnace stability is assured because evaporative heat is controllable to compensate for density differences in incoming liquor, regardless of limited multiple effect evaporator capacity. Liquor temperature is controlled accurately and automatically and fuel-air ratios are automatically proportioned to maintain the furnace atmosphere required for high reduction.



COMBUSTION ENGINEERING
Combustion Engineering Building • 200 Madison Avenue, New York 16, N. Y.

C-155

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING EQUIPMENT; PRESSURE VESSELS; OIL PIPE

PULP & PAPER

Strictly Personal

BRAINERD, JR., onetime technical sales supervisor for Monsanto Chemical Co., is chemical sales representative for Arkansas Louisiana Chemical Corp., Shreveport, La., and JAMES W. SHACKELFORD, Houston, Tex., International Paper Co. and Diamond Alkali Corp. veteran, is now mgr. of Arkansas Louisiana's chlorine plant at Pine Bluff. . . .

We were saddened to learn of the death of R. J. (DICK) CONTEL, youthful carton mgr. of Olin Mathieson's Forest Products Div. Dick died unexpectedly last month. He was formerly with Fibreboard Products in San Francisco. . . . Those who noted the absence of PAT and ISOBEL YUNKER at this year's Supts. meeting in Chattanooga (the first they've missed in years) will be happy to know they had a previous date with the stork. MALCOLM GORDON YUNKER was born to the E. D. JONES rep the last day of the convention. He weighed in at six-and-a-half pounds. . . HOWARD W. EDMINSTER, formerly chief engineer for High Voltage Engineers, Burlington, Mass., is now representing John W. Bolton & Sons, Inc., in the southeast. He lives in Jax.

Northeast

Memo from MRC

SOLON D. FISHER was appointed asst. mgr. of the St. Louis sales branch, Solvay Process div., Allied Chemical Corp. Mr. Fisher is a graduate of Kansas State College and joined Solvay in 1948. . . .

DICK PREMO is now technical consultant with Bulkley, Dunton Pulp Co., Inc. . . . JOHN E. DAVIS is chief industrial engineer at Brown Co., Berlin, N.H. . . . DONALD JAMISON has been promoted to day foreman, beater dept., and KAI E. WULFF to tour foreman, Oxford Paper Co., Rumford, Me. . . . GUENTER HERWIG, development engineer at Finch, Pruyn & Co., honeymooned with his bride, Doris, for seven weeks in Europe and North Africa. . . .

DR. RAYMOND (Doc), I. BASHFORD JR. has joined the eastern technical sales service and field development staff of Penick & Ford, Ltd., Inc. He had been with DuPont for eight years. Doc is a grad b.s. grad cum laude in chemistry from Syracuse U., where he earned his ph.d. in organic chemistry in 1950. . . .

CLINTON M. LAW, previously plant manager, United Board and Carton Co., Urbana, O., has joined Lockport Felt Co. as technical service representative. . . . DR. BROR E. ANDERSON, formerly with A. B. Dick Co., steps in as technical director of The Narrow Fabric Co. . . . JOHN M. CLABAUGH has retired as paper mill supt. at West Virginia Pulp and Paper Co's. Luke, Md. mill. Because of

Thompson ..... Bentley

Changes at West Virginia

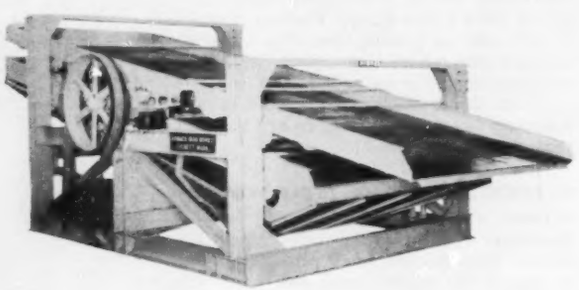
ROBERT L. BENTLEY succeeds L. FRANK THOMPSON as mgr. of the kraft div. of West Virginia Pulp and Paper Co. Mr. Thompson was named mgr. of the Hinde & Dauch div. of Westvaco, succeeding CHARLES E. FROHMAN who retires because of health.

More than 70 SUMNER chip screens are operating efficiently throughout the world providing uniform chips for pulp mills.

SUMNER screens, which come in various sizes to fit your needs, are a package unit, easily installed with capacities up to 25 units of chips per hour.

Write, wire or phone Sumner, or our nearest distributor listed below, for information on how SUMNER chip screens can go to work for you

DESIGNERS AND BUILDERS OF MACHINERY FOR FOREST PRODUCTS INDUSTRIES



SUMNER CHIP SCREENS —for better pulp chips

Designers and Builders of Quality Machinery for the Forest Products Industries

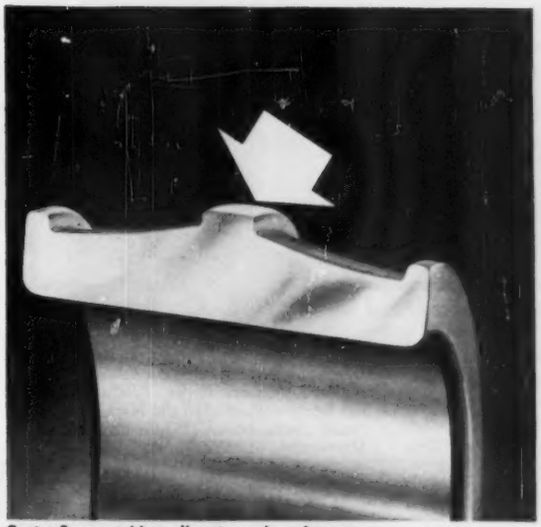
ESTABLISHED 1897

SUMNER IRON WORKS

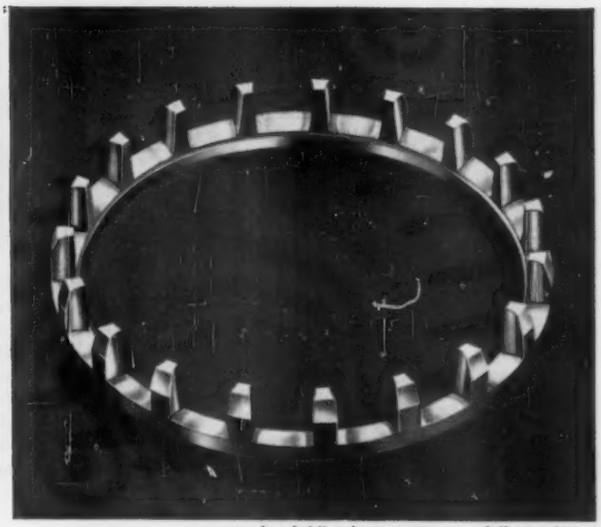
EVERETT, WASHINGTON

In Canada: Canadian Sumner Iron Works Ltd., Vancouver, Canada

WILCO MACHINE WORKS, Inc. ..... Memphis, Tenn.
FRED E. BARNETT CO. ..... 5 Offices in California & Oregon
DILLON SUPPLY CO. ..... Raleigh, N. C.

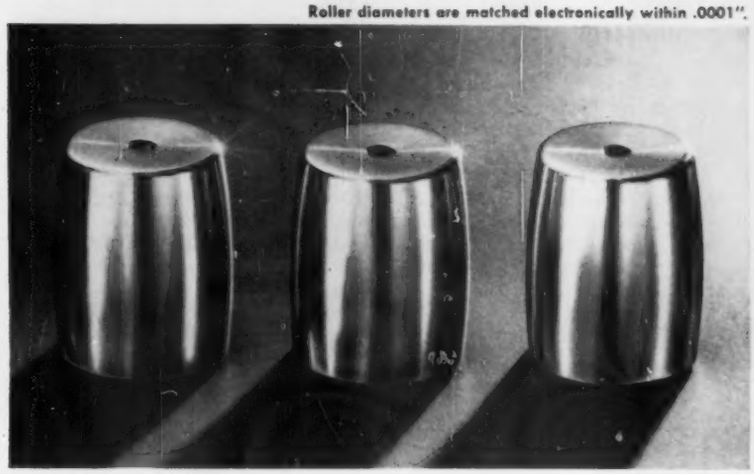


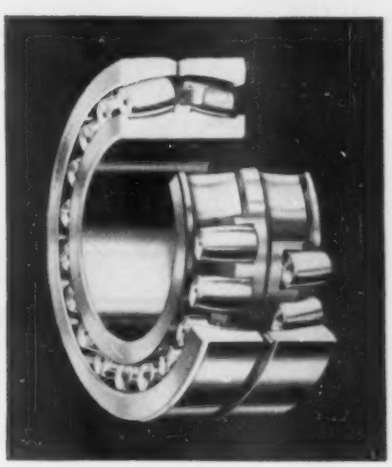
Center flange guides rollers to peak performance.



Land-riding bronze cages are fully machined.

Roller diameters are matched electronically within .0001".





Consider every design feature and you'll choose Torrington!

Torrington has compromised none of the operating design features of its Spherical Roller Bearing, because application experience has proved them essential to superior bearing performance.

There's no substitute for the stabilizing effect of the integral center guide flange. Torrington's asymmetrical roller seeks this flange under load. Skewing and stress concentrations are eliminated. Every roller carries its share of the load, for roller diameters are matched electronically within .0001" for even load distribution.

Rollers are precisely spaced by fully machined land-riding bronze cages that withstand even the high stresses of eccentric service. Two independent cages, one for each row, prevent roller drag and side stresses under thrust loads. Size-stabilized races prevent "growth" or change in dimension in service.

These features mean a cooler-running, longer-lasting bearing. When you buy bearings, look into *every* detail, and you'll choose Torrington. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

Superior performance features of TORRINGTON SPHERICAL ROLLER BEARINGS:

- Integral guide flange for roller stability
- Asymmetrical rollers seek flange for positive guidance
- Electronically matched rollers
- Size-stabilized races
- Fully machined land-riding bronze cages
- Controlled internal clearances
- Even load distribution
- Inherent self-alignment
- Long service life

Send for new Spherical Roller Bearing Catalog No. 258

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST

installation of two new paper machines, the mill has been divided into upper and lower mills, each headed by a superintendent. ROY P. WEBBER II will head the upper mill which includes Nos. 6 and 7 machines plus the two new Nos. 8 and 9. JOHN L. OLEWINE, paper mill asst. at the Covington, Va. mill, heads the lower mill with paper machines Nos. 1, 2, 3, 4, and 5.

HARRY RIMBERG of H. Rimberg & Associates, finishing room consultants, has joined Calkin & Bayley, Inc. with his staff. . . . JOHN STUART SMITH JR. is now

Scott Names Roderick H. Sears Director of Purchases

. . . at the firm's main offices in Chester, Pa. Mr. Sears joined Scott in 1936 after graduating from Harvard and has served as plant mgr. in Hoboken, South Glens Falls, N.Y., Marinette, Wis., and Fort Edward, N.Y.

general sales manager of American Smelting & Refining Co. and RALPH L. WILCOX has been named asst. sales mgr. . . . DR. EDWIN A. REES, retired director of Huyck Felt Co., died recently at age 67. He had been with Huyck for over 30 years. . . .

Wes Youngchild Wins

WES YOUNGCHILD, retired former I.P. mill manager in New York state North Tonawanda, N.Y., brother of CAP YOUNGCHILD, industry consultant, and father of KEN YOUNGCHILD, American Cyanamid's Southern manager, Mobile, Ala. just recently proved what a retired papermaker can do, when he sets his mind to it. He won the Class C flight honors in the Appleton, Wis., Riverview Country Club championship, defeating five opponents on his way to the top.

Pacific

Memo from LHB

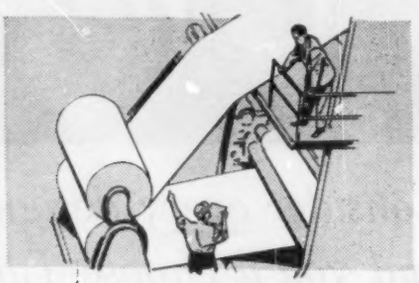
JAMES F. BRINKLEY JR., whose father, JAMES F. BRINKLEY, of Seattle, heads an equipment supply firm for this industry, moves from San Francisco to Los Angeles as a district printing papers rep. for Simpson. . . . LEONARD M. FAIKE joins Simpson Paper Co.'s office in San Francisco as district representative, converted products. . . . JOHN I. HENDERSON is new traffic mgr. of Simpson's Everett mill,

Altick Is NPA Director

Bernard P. Altick, vice president–marketing, Fibreboard Paper Products Corp., has been re-elected to the National Paperboard Assn. board. While attending the University of Washington, Seattle, he worked as a mill hand for the predecessor company, Fibreboard Products Inc., during summer vacations. He transferred to sales in 1925. During World War II he served as deputy director, Paperboard Division, War Production Board.

succeeding F. M. W. VANSCHAIK, who died in September. . . .

S. S. Moore & Associates, with headquarters in Portland, Ore. (2035 S. W. 58th Ave.) expands its line of industrial products. This firm now represents the following in the Pacific Northwest: Carboline Co., corrosion resistant protective coatings; Vibra Screw Co., dry materials feeders; Pennsylvania Pump & Compressor Co., pumps and compressors (Oregon



- **additional hours of service, fewer breakdowns, calendering results that pass the most critical inspection**
- **lower production costs because calendering schedules are maintained, sheet quality is assured**

Try just one Butterworth Dura-Smooth Roll in your calender stacks. You'll be amazed at the extra hours of service, uniform production.

Butterworth Rolls are made of top quality paper of high rag content. Pre-tested for hardness, smoothness and density – they meet your exacting specifications.

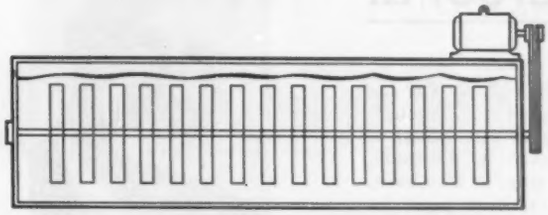
Furnished new or refilled for every calendering need. And you get Butterworth Rolls at competitive prices. Quotations on request.

H. W. BUTTERWORTH & SONS COMPANY
Bethayres, Pa. Division of Van Norman Industries, Inc.

BUTTERWORTH

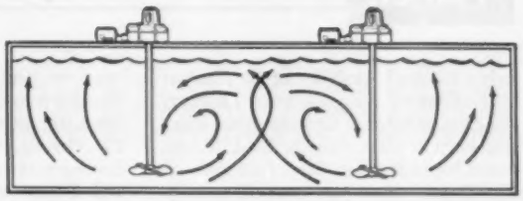
More than 60 years of Roll-Making Experience

Look what happened when this mill stopped **sloshing** *and started* **mixing** *stock*

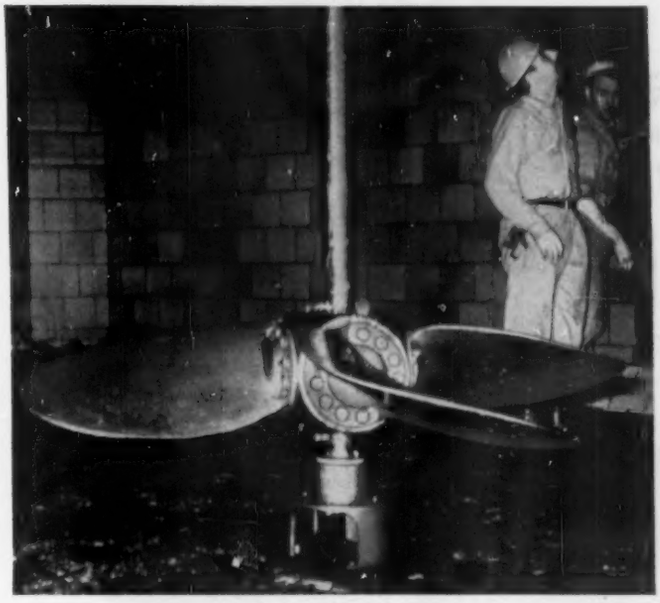


1. Familiar story? A large newsprint mill* was having a tough time getting a uniform 3½% feed of groundwood and sulfite from its mixed stock chest. The stock was churned with paddles on a horizontal shaft, in a chest 56′ long, 17′ wide, 16′ high. But the paddles were *sloshing* the stock instead of mixing it. This caused wide swings in consistency.

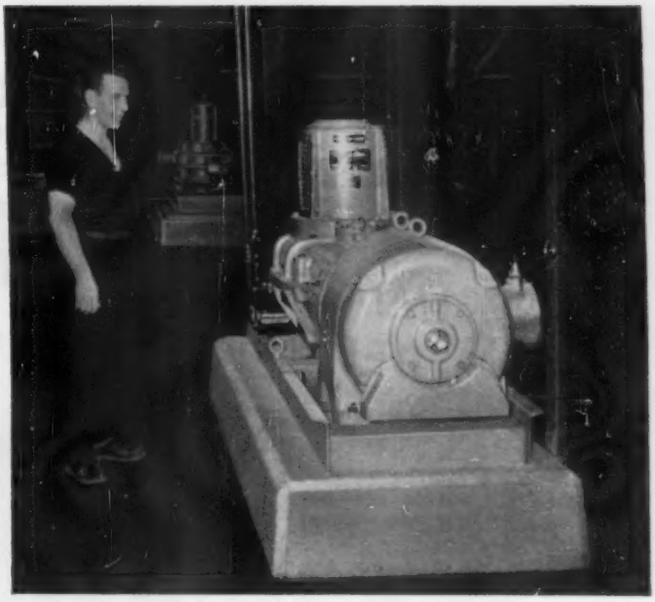
*Name on request



2. "Why put up with it?" said MIXCO engineers. "You can get *complete uniformity* with two LIGHTNIN Mixers that look like this. Every pound of stock will be thoroughly mixed from the instant it enters the chest. No dead areas—no stagnation—no stratification—no sudden ups and downs in consistency. What's more, we'll *guarantee* that LIGHTNINs do the job."



3. "Sounds good," said mill engineers, "but will we have to modify our chests to install these units?" "Not at all!" said the MIXCO men. "Make the whole change over one week-end. They come ready-assembled and aligned to minimize your down-time." Here's one of the two LIGHTNINs being installed. It drives a 54" stainless steel propeller with four adjustable blades.



4. Results? "Since installing LIGHTNINs we've repeatedly beaten our best previous daily production record," say mill engineers. "Effluent is so uniform that we're better off pumping directly to the machine, bypassing a machine chest entirely. Consistency of the stock varies *less than* 0.2% between any two points in the chest at any time!"

Can you make productivity jump with this kind of mixing? More than 100 mills are doing it! No need to guess—you can get the precise power level you need to do the mixing job you want done in a given chest within a given time. It costs you nothing to find out how. For quick, competent service, call in your LIGHTNIN Mixer representative (listed in Thomas' Register). Or write us direct.

FOR LATEST MIXING INFORMATION and full description of LIGHTNIN Mixers, send for these helpful bulletins:

- ☐ NEW BULLETIN "Agitation and mixing for pulp & paper mills"—complete and helpful mixing information on stock agitation, pulping liquors, coating systems, and waste treatment (B-511)
- ☐ Laboratory and small-batch production types (B-112)
- ☐ Top or bottom entering; turbine, paddle, and propeller types: 1 to 500 HP (B-102)
- ☐ Top entering; propeller types: ¼ to 3 HP (B103)
- ☐ Side entering: 1 to 25 HP (B-104)
- ☐ Portable: ⅛ to 3 HP (B-108)
- ☐ Condensed catalog showing all types (B-109)
- ☐ Quick-change rotary mechanical seals for pressure and vacuum mixing (B-111)
- ☐ Data sheet for figuring general mixer requirements (B-107)

Check, clip, and mail with your name, title, company address to:

MIXING EQUIPMENT Co., Inc., 141-n Mt. Read Blvd., Rochester 3, N.Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 19, Ont., Can.

Lightnin® Mixers™

MIXCO fluid mixing specialists

Strictly Personal

only); National Air Vibrator Co., Industrial vibrators. . . . PATRICIA LINDLEY, daughter of MARION LINDLEY, plant mgr., San Joaquin plant Antioch, Calif., Fibreboard Paper Products Corp. (and sister of PAT DAVIS, office) was married recently to MARTIN "BILL" RIOS, pulp mill.

CHARLES H. DAUTERMAN promoted to production planning supervisor at CZ Los Angeles converting plant. . . . LAURON R. GIERSCH from paper machine supervisor to paper mill supt. at CZ Los Angeles converting plant. . . . PETER T. SINCLAIR, pres. & chief exec. officer of CZ Canada, CLARENCE A. ANDERSON, development chem. engr. at CZ Camas, and FRANK B. HALE, head paper inspector CZ West Linn, round out their 30th year with Crown Z. . . . LORENA M. KEMP, executive secretary of CZ Port Angeles mill, completes 35th year. . . .

Weyerhaeuser Pulp Div. promotions:

CZ Promotes Miles Murray

Mr. Murray, northwest area personnel supervisor for Crown Zellerbach, was named supervisor of industrial relations research and planning at CZ headquarters in San Francisco. He has been with CZ since 1930, since 1940 at Portland, Ore., in various industrial relations capacities.

BILL CARNS, plant engr. of Everett kraft mill to construction engr. Pulp Div., filling vacancy resulting at Longview when MERRILL ROBISON became mill mgr. of Grays Harbor Div. . . . TOM FIRESTONE, project engr., advanced to plant engr. at Everett kraft mill. . . . ERSKINE INGRAM, from asst. supt. Longview kraft mill to asst. supt. Everett sulfite mill. . . . BILL HALL, Everett kraft shift foreman, to asst. kraft supt. at Longview. . . .

I. W. NELSON is promoted to new position of safety and plant protection mgr., H. M. OTTERLEI to employment and services mgr., both at Scott Paper Co., Everett. . . . DARRELL "BALDY" LENFEST, plant protection supervisor at Scott Paper Co. Everett, has retired. . . .

G. A. SIEVERLING, converting plant mgr. since 1941 at Simpson Paper Co., Everett, retires. . . . HARRY ZWEIG, Tacoma safety director for St. Regis Paper, accompanied Justice WILLIAM O. DOUGLAS on his nationally reported 22-mile hike along the coast of Washington . . .

WTCo Promotes Heacox

EDWIN F. HEACOX becomes mgr. of forestry, lands & timber at Weyerhaeuser Timber Co., Tacoma, Wash. effective Jan. 1 when C. D. WEYERHAEUSER retires as vice pres. in charge of timber dept. Mr. Heacox has been associated with WTCo. since 1930, for past 10 yrs. as managing forester. Mr. Weyerhaeuser continues as a director of WTCo.

MURCO
40" 6 KNIFE
LEFT HAND
Rechipper
WITH
STATIONARY SPOUT

- CAPACITY 700-800 cubic feet of chips per hour.
- DISC 40" dia. x 2" thick steel plate provided with blower vanes and renewable wear plates.
- DISC SPEED 870 RPM.
- SPOUT SIZE 8¾" x 8¾".
- MOTOR 15 HP, 870 RPM TEFC Induction Motor
- BLOWER HOUSING ¼" steel plate.
- OVERALL SIZE — 4'0" x 6'9" x 4'0".
- BASE — Cast iron with extension for the direct connected motor.
- NUMBER OF KNIVES — 6 size ⅝" x 4¼" x 12" lg. Alloy Steel.
- SPOUT LINERS — Replaceable steel plate, hard surfaced.
- COUPLING — Flexible.
- SHAFT — High carbon steel.
- BEARINGS — Spherical roller bearing pillow blocks.
- WEIGHT — 3000 lbs. including motor.

Write, wire, phone for complete proposal.

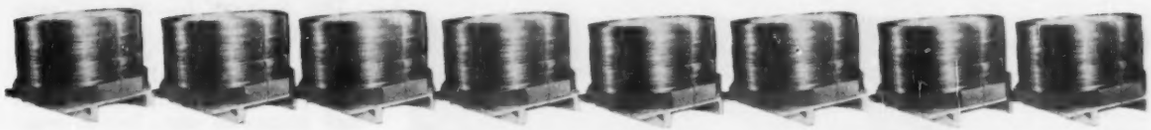
D. J. MURRAY MANUFACTURING CO.
WAUSAU, WISCONSIN

MURCO

OUR 75TH YEAR 1883 TO 1958

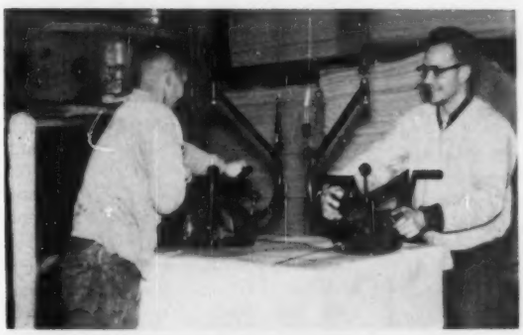
PULP BALE STRAPPING

EFFICIENT . . . ECONOMICAL . . . LESS TARE . . .



OVALSTRAPPING: Treated, high tensile steel strap * Excellent joint and strap strength * Continuous coils of predetermined footage * Easy inventory * Customer approved

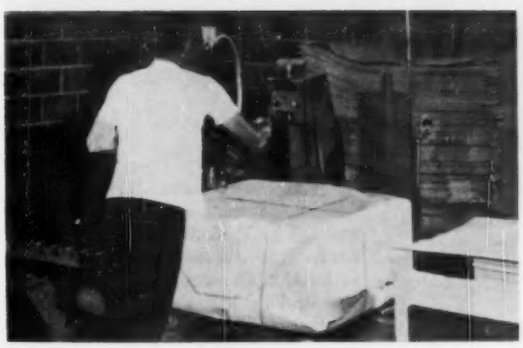
ALL 3 METHODS OF APPLICATION



1

MANUAL OPERATION

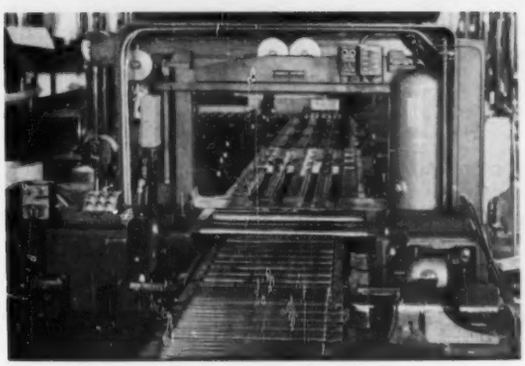
A familiar Ovalstrapping scene in many mills today. Provides a fast, smooth, "no-down-time" operation. Some mills have changed this scene to partial, or full Power Assist.



2

FULL POWER ASSIST

A "one-man operation," made possible only by the use of power driven tying tool and power wire feed. Maintains an excellent rate of production with minimum fatigue. Available for two man operation as well.



3

FULLY AUTOMATIC

One directional, or two directional tie. Rugged construction — high speed — low maintenance. Will handle *all* bale sizes — paper grade or dissolving grade. Completely self-contained, needs simply to be located in position and connected to service lines. A handsome addition to any pulp mill where an Automatic is justified.

For further information, please write to:

OVALSTRAPPING, INC.

Box 704 **Hoquiam, Washington**

Strictly Personal

Industry Trebles Support of Canadian Institute, Says Fred Allen

Canada's Pulp and Paper Research Institute has moved into a new modern building (above) at Pointe Claire, Quebec, west of Montreal, especially built for the purpose, with an impressive array of equipment, the whole project costing $2,250,000.

Financing of the Institute represents a three-way partnership between industry, government and McGill University in Montreal, which had its inception in 1913. Present organization of the institute with its own board of directors dates from 1950.

Outlining the functions of the Institute, its president, Dr. Lincoln Thiesmeyer stressed the international scope of the enterprise. Representing industry at the opening ceremony was Fred L. Allen, executive vice president, Canadian International Paper Co., who reported that during the past decade the mills have trebled their support of the Institute.

TIME TO SCRAPE HULLS-

IF any barnacles of obsolete or inadequate productive facilities are left in your plant, the time has come to drydock your ship of business.

The tide is flowing in, definitely, if perhaps, slowly.

Competition is afloat, but the prize and the profit go to those who sail swiftest—those with smooth hulls and spread sails.

Time to scrape hulls.

THIS MESSAGE WHICH FIRST APPEARED A QUARTER CENTURY AGO IS AS PERTINENT TODAY—FOR IT IS AGAIN A GOOD TIME TO SCRAPE THE HULLS OF YOUR SHIP OF BUSINESS.

J. E. SIRRINE COMPANY · Greenville, South Carolina

Engineers Since 1902 — A DEPARTMENTALIZED ENGINEERING ORGANIZATION SERVING • BUSINESS • COMMERCE • INDUSTRY

Canada

Memo from CLA

DON STEWART, formerly asst. paper mill supt. (admin.) at Cornwall Div., Howard Smith Paper Mills, has been made supt. of yard and wood handling dept. . . . PETER SEDGWICK, formerly stock preparation supt., has succeeded Mr. Stewart in his former post. . . . ELLIS TAYLOR continues as paper mill supt. i/c operations and also assumes active charge of a planning group concerned with installation of a new paper machine. . . . BASIL TILTON, asst. paper mill supt. (operations) is in charge of day-to-day operation of the paper mill under Mr. Taylor's direction. . . . This chain of promotions was due in part to the recent death of RUSS SPAFFORD. . . .

R. E. CISTELLO has been named gen. mgr. of a new panelboard div. by Abitibi Power & Paper Co. . . . PALMA LEBORGNE has been appointed asst. paper mill supt. of Donnacona Paper Mills. . . . GERALD A. CASTONGUAY is paper mill supt. of Dryden Paper Co. . . . J. D. NICHOLSON continues with the company as consultant, but ill health caused his retirement. . . .

C. NEWTON HOPKINS has been promoted to plant engineer at Hooker Chemicals, Ltd., North Vancouver, B.C., according to Works Mgr. ROBERT E. NOBLE. He succeeds LAWRENCE P. HALLAHAN, who has been appointed plant engineer for the Jerrersonville, Ind., plant of Hooker Chemical Corp.'s phosphorus div. . . .

J. G. MORRISON has been appointed asst. mgr., mfg.-pulp and paper board, for Abitibi Power & Paper Co. He was formerly with the company's Fort William div. as mill mgr., a position now assumed by T. C. ANDERSON. Mr. Anderson spent several months in New Zealand under Abitibi's management contract with Tasman Pulp & Paper Co. . . .

M. J. FOLEY, pres., Powell River Co., received a new honor from his alma mater, Notre Dame University, an appointment to the university's liberal and fine arts council. . . . J. H. M. JONES is the new pres. of Bowater's Newfoundland Pulp & Paper Mills, succeeding GEORGE S. CURRIE, who continues as a director. . . . P. S. QUINN has been made mgr. of mfg. for Anglo-Canadian Pulp & Paper Mills. Mr. Quinn was succeeded as mill mgr., for Anglo-Canadian at Quebec City by J. WINN. . . .

T. G. SHEPHERD has been appointed gen. supt., pulp and paper div., Donnacona Paper Co. D. E. EASTMAN has been named div. controller of Donnacona. . . .

HARVEY T. WHITSON was named traffic mgr. for Crown Zellerbach Canada, succeeding the late G. R. "BUS" BOLTON, who died suddenly in September. . . .

Paperboard products get a real lift with TITANOX*. Packaging with greater point-of-sales appeal . . . book and magazine stocks with greater contrast and less show-through . . . opacified glassines and waxed papers with high legibility—all share in the matchless whitening, brightening and opacifying power of TITANOX titanium dioxide white pigments.

To achieve these results, papermakers can choose from among such white pigments as TITANOX-A-WD, TITANOX-C-50, or TITANOX-RA-50. Whether used at the beater or in the coating, TITANOX white pigments insure easy mixing, complete dispersion and uniformity of all properties. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; offices and warehouses in principal cities.

TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY

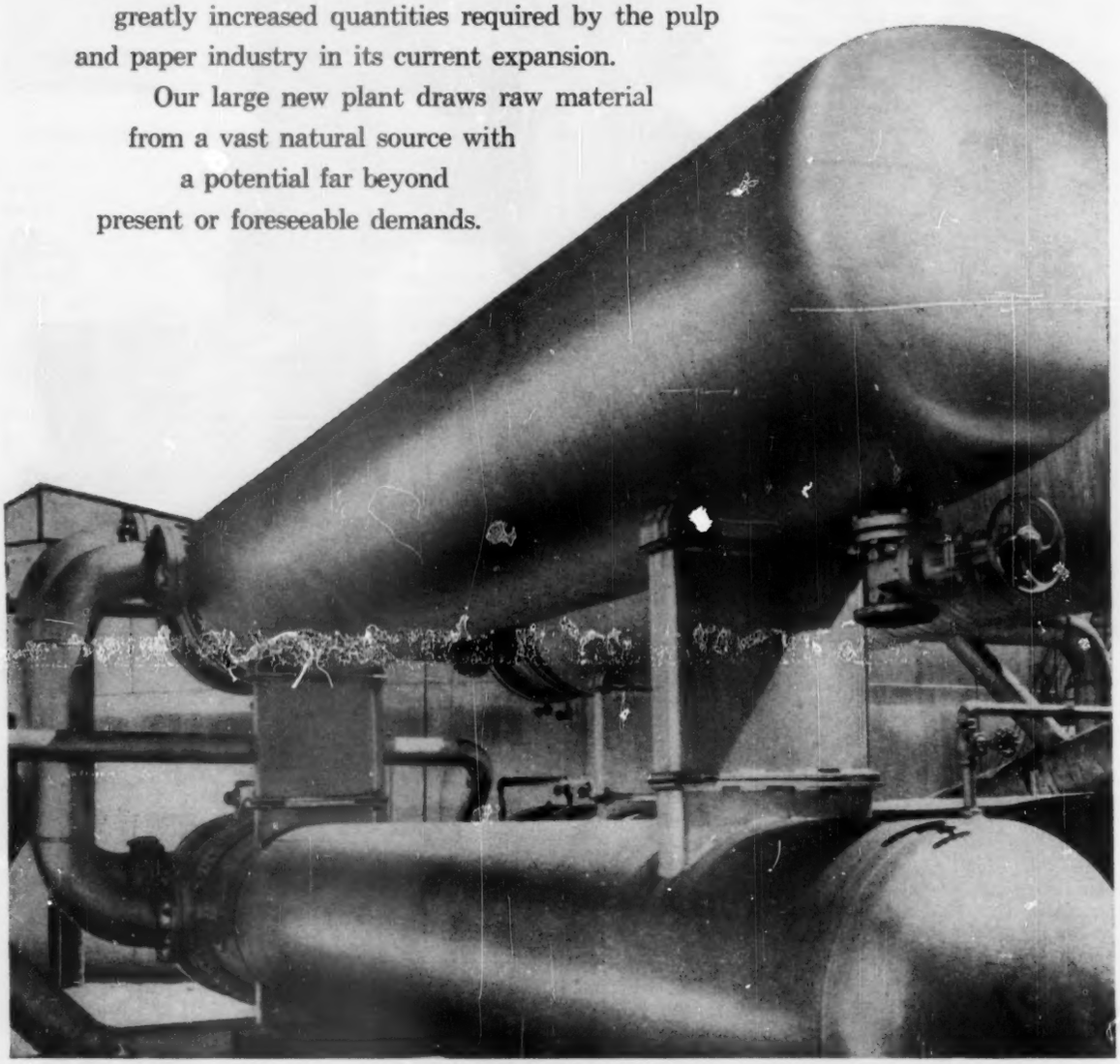
*TITANOX is a registered trademark for the full line of titanium pigments offered by Titanium Pigment Corporation.

5729

SALT CAKE is a primary West End product and we have the production capacity to meet your needs

At West End, salt cake is a prime product . . . not a by-product . . . and is being produced in the greatly increased quantities required by the pulp and paper industry in its current expansion.

Our large new plant draws raw material from a vast natural source with a potential far beyond present or foreseeable demands.



WEST END

West End Chemical Company

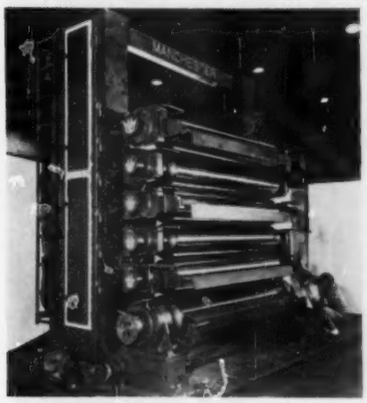
DIVISION OF STAUFFER CHEMICAL COMPANY

EXECUTIVE OFFICES, 1956 WEBSTER, OAKLAND 12, CALIF. · PLANT, WESTEND, CALIF.

SODA ASH • BORAX • SODIUM SULFATE • SALT CAKE • HYDRATED LIME

New Equipment Section

Open-Side Calender
. . . Has Anti-Friction Bearings

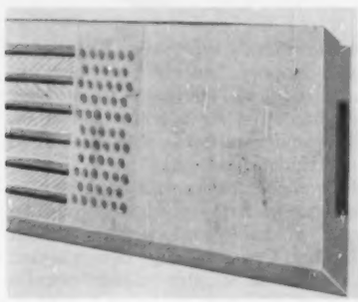


Applications: For calendering paper.
Advantages: This newly designed open-side calender features independent load control of every roll in the stack; air-over-hydraulic loading for simpler, more sensitive control; fast removal of any or all rolls; and a rugged all-steel frame.
Specifications: Stack is operated from a separate machine aisle console. A provision enables operators to counterbalance the rolls individually.
Supplier: **Manchester Machine Co., 3808 Grand Ave., Middletown, O., phone 2-3621.**

Packaged Boilers
. . . Have Greater Capacity

Applications: Generating steam for power.
Advantages: The use of natural circulation reduces total cost of the boilers considerably. No recirculating pumps are required, simplifying operating and maintenance problems. The boilers are completely factory-assembled for economical shipment and installation, and are designed to burn either oil or gas or a combination of both. A drainable superheater is cooled and protected with steam as soon as drum pressure is raised. Ease of draining the superheater permits a fast, safe startup.
Specifications: Capable of generating steam at capacities up to 100,000 pph or more, the B&W Package Boilers, Series 100-OG are designed to operate at steam pressures ranging from 250 to 775 lb. per sq. in. They are designed for pressure-firing, eliminating the need for an induced fan draft. Tubes in the convection bank are arranged in alternate wide and narrow side spacing, simplifying tube replacement.
Supplier: **Babcock & Wilcox, 161 E. 42nd St., New York, N. Y., MUrray Hill 7-6700.**

Suction Box Cover
. . . Made of Hard Maple

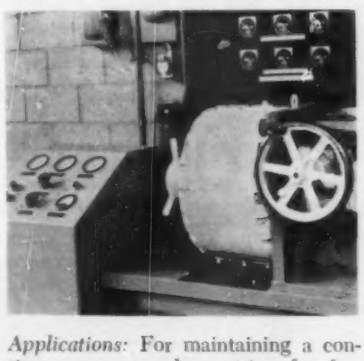


Applications: To cover suction boxes.
Advantages: Cover is constructed of winter cut, end of grain maple. This produces a wax like surface that gives longer life to wires. Where water removal is a bottle neck, tonnage has been increased as much as 10 to 20%.
Specifications: The lands are supported on cross members of Reslin laminate which does not contract or expand. The cover is fully soaked and ready to place in service.
Supplier: **Appleton Wood Products, Appleton, Wis., REgent 4-3414.**

Shear Tester Device
. . . Measures Yield Stress

Applications: The device measures yield stress, which may then be used to determine new correlation parameters which promise to play the same role in stock hydraulics as the Reynolds number plays in true fluid flow work.
Advantages: The shear tester, resulting from eight years work by the TAPPI Hydraulics Committee, measures yield stress by simply being placed on the surface of a stock sample and the handle slowly rotated.
Specifications: Torque transmitted through a spring causes the dish to rotate, which in turn causes elastic deformation of the stock. Continued advances of the handle increase the scale reading until the yield stress value of the stock is reached. This value is read directly from a clearly marked scale. Further advance of the handle causes a drop in the reading as the stock "fails" in shear. Price is $89.50 net and delivery is from stock.
Supplier: **Fischer & Porter Co., 824 Jacksonville Rd., Hatboro, Pa., OSborne 5-6000.**

Jordan Plug Control
. . . Maintains Proper Setting



Applications: For maintaining a continuous proper plug setting for furnish.
Advantages: Once the proper setting for a certain furnish is determined, this setting will be maintained by air pressure without further attention. With air control, if the furnish changes in consistency or freeness, or if it is necessary to run new furnish at different internal pressure, the setting can be changed by merely adjusting a control knob.
Specifications: A pneumatic actuator, consisting of a suitable number of diaphragms with an air chamber on each side, is used in place of a handwheel. Control valves in an instrument cabinet determine and maintain a constant pressure in each chamber. The pressure, acting on the diaphragm, maintains a constant force on the plug. Either a forward force or a holding force may be applied. Pneumatic actuators are available in different sizes according to conditions and sizes of jordans. They are adaptable to any jordan, Claflin or other refiner.
Supplier: **Emerson Mfg. Div., John W. Bolton & Sons, Inc., Lawrence, Mass., LAwrence 6171.**

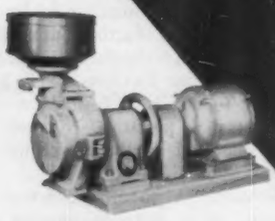
Meet Huyck's
HANCHETTE

Jim Hanchette, a member of Huyck's Chemical Service Engineering Staff, is devoted to solving chemical problems associated with the use of felts. A graduate of Clarkson College of Technology, he spent 2 years in the Army Chemical Corps and 1 year as a petroleum technologist before joining Huyck. To Jim and his group goes the important job of analyzing felt samples for evidence of bacterial and chemical damage and uneven wear — plus the development of custom-designed washing formulae to help papermakers keep felts cleaner.

HUYCK FELTS

First in Quality . . . First in Service Since 1870

VERSATILE LABORATORY MILL



Here's a disc mill for your laboratory . . . to do miscellaneous grinding jobs of either wet or dry material; to refine cooked chips and knotter or screen rejects; to fluff dry pulp samples.

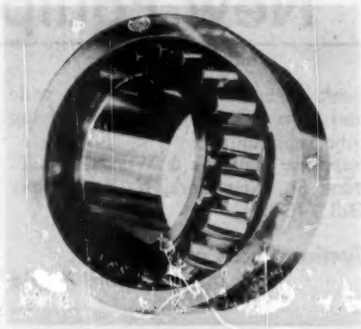
For details and bulletin on the Bauer Laboratory Mill, write us or call FAirfax 3-5501.

The Bauer Bros. Co.

HEADQUARTERS FOR PROGRESS

1758 Sheridon Ave. • Springfield, Ohio

King-Size Roller Bearing
. . . Insures Minimum Friction

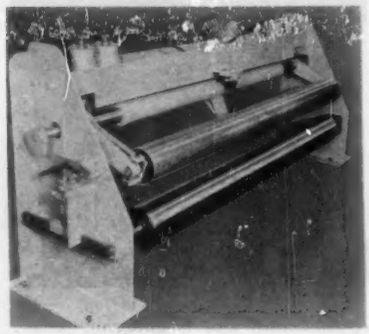


Applications: Wherever large size, high-capacity, anti-friction bearings are required. Several have been manufactured for a huge ten-roll supercalender stack on which the bottom roll diameter is 50 in.
Advantages: Roller has integral center guide flange, insuring positive roller guidance and stability without skewing. Open-end cage design makes sure that no shrouds impede circulation of lubricant to bearing contact surfaces.
Specifications: This bearing has inside diameter of 26.3780 in., outside diameter of 48.0315 in., and is 17.2441 in. wide. It has a basic dynamic capacity of 3,150,000 lb., and weighs 5,100 lb.
Supplier: **The Torrington Co., South Bend 21, Ind., ATlantic 7-3320.**

New Type Aeration System
. . . Dissolves More Air

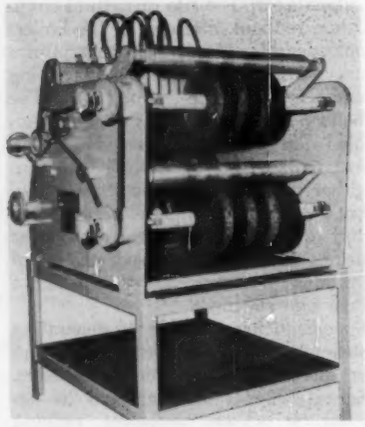
Applications: For white water processing in flotation savealls.
Advantages: A new aeration method substitutes a controlled flow of white water and metered compressed air directly to the aeration-retention tank, eliminating the disadvantages of aspirated air to the pump suction. Greater mill savings are obtained by more rapid flotation of fiber and filler, denser recovered stock, reduction in chemical and operating costs, greater B.O.D. reduction, and cleaner clarified water for re-use.
Specifications: The Aqua-Air Spray aeration system is designed for use with the flotation saveall system. Standard units are available in sizes ranging from 100 to 3,000 gpm.
Supplier: **Sveen-Pedersen Sales Corp., 25-36 Jackson Ave., Long Island City 1, N. Y., STillwell 4-5348.**

Constant Tension Device
. . . Gives Automatic Control



Applications: For use with converting machines such as slitter-rewinders and laminators.
Advantages: It is designed to operate in conjunction with other air or electrically operated units for automatic tension control.
Specifications: The device is a dancer roll for use over a wide range of tensions and materials. It is air-loaded by remote control and does not require the use of counterweights. The friction-free loading mechanism increases the sensitivity of the unit so it can handle lightweight grades.
Supplier: **The Black-Clawson Co., Dilts Div., Fulton, N.Y.**

Duplex Rewind Slitter
. . . Features Slip Clutches



Applications: Slitting and rewinding paper.
Advantages: Felt driven overriding slip clutches on the rewind shaft,

NO GAP AT THE LAP

WITH ESCO DIGESTER STRAINERS

ESCO designed digester strainers provide for adequate circulation throughout the entire cook. Free flow of liquor at high velocity produces maximum efficiency in the circulating pump. The tendency for deposits to build up inside the heat exchanger tubing is minimized.

SIMPLE TO INSTALL, EASY TO CLEAN AND NO GAP AT THE LAP

ESCO Digester Strainers may be attached with *ESCO* Wedge-type Lugs or bolts for easy cleaning changing. *ESCO* lap joints means a cleaner circulating system.

ESCO Cast Digester Strainers are available in the high alloy steels best suited to your corrosion problem. Strainer screens are also available cast in matching alloys.

Get the greatest efficiency from your digester circulating system. Write for *ESCO* Catalog No. 175.

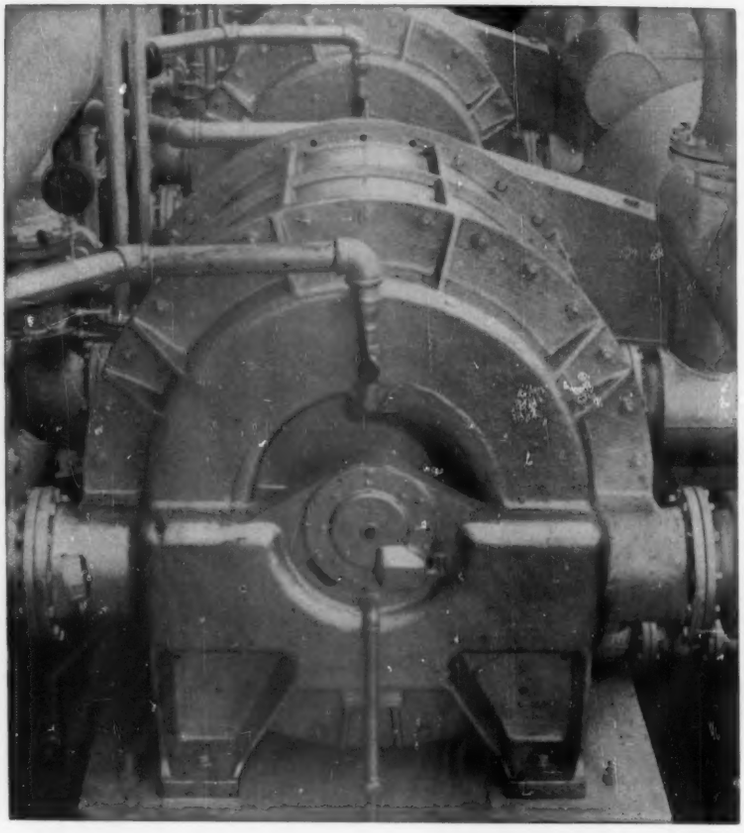
ESCO®

ELECTRIC STEEL FOUNDRY COMPANY

2167 N. W. 25TH AVE. • PORTLAND 10, OREGON

MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
Offices in Most Principal Cities
ESCO INTERNATIONAL, NEW YORK, N. Y.
IN CANADA ESCO LIMITED

High machine speeds? High temperature headbox stock? You need NASH Vacuum Pumps!



Air from the suction rolls on paper machines carries with it substantial quantities of moisture. This considerably reduces the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump, because of the unique principle of operation, the bulk of this vapor is effectively condensed inside the pump. The total capacity of a Nash is therefore increased.

Whe.. you specify a Nash Pump it can be closely sized to the job. It is not necessary to select an over-sized unit, because the rated capacity of the Nash may be relied upon.

That is one of the reasons why Nash Vacuum Pumps are installed in over a thousand leading Paper Mills. An engineer from Nash will be glad to survey your mill, and make recommendations, entirely without obligation to you.

NASH ENGINEERING COMPANY

441 WILSON ROAD, SO. NORWALK, CONN.

operating on a spinning reel principle, minimize tension and eliminate tearing. Material is fed through machine by a pair of nip rolls whose pressure is controlled manually. Therefore the duplex rewind shafts have only to take up the slit material with enough tension to insure a uniform roll. Rewind shaft has a patented core principle permitting each rewind roll to operate independently from the others, compensating for caliper variations.

Specifications: Slitter is available in different combinations, including four speed quick change drive and reliance variable speed drive and with either score cut or razor blade splitting stations. Parent roll is up to 15 in. diameter with maximum width of 24 in. Minimum slit, score cut is 1½ in. and razor blade, ½ in. Speeds are from zero to 750 fpm and mandrels are standard 1½ in. or 3 in.

Supplier: **Doven Div., Appleton Machine Co., Appleton, Wis., REgent 3-7361.**

Compact Gear Drive

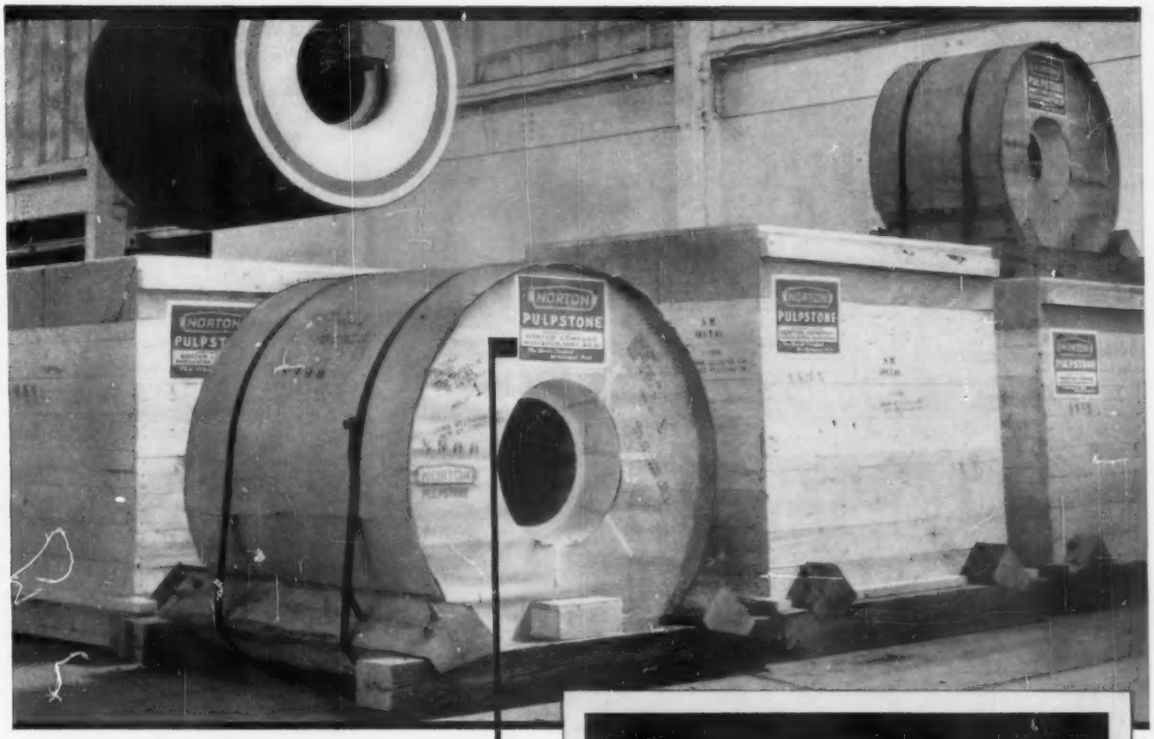
. . . Bolts Directly to Machine

Applications: For horizontal or vertical drive applications, with high speed shaft up or down.

Advantages: Unit is designed with bearing capacities for overhung and thrust loads to allow installation of drive into the driven machine as a geared pillow block, if desired. Thus it is possible to eliminate one machine bearing and cut down overall size of installation.

Specifications: Falk Flange Mounted Drives are built to American Gear Mfrs. Assn. recommendations and are furnished from stock in single reduction for applications of ⅛-10 hp and in two double reduction ratios for ⅛-5 hp. Information for applications of greater hp available from supplier. Drives are constructed with precision helical gears.

Supplier: **The Falk Corp., Dept. 255, 3001 W. Canal St., Milwaukee 1, Wis., DIV 2-3131, ask for Bulletin 7140.**



NORTON®
PULPSTONE
MANUFACTURED IN U.S.A. BY
NORTON COMPANY
WORCESTER, MASS., U. S. A.
The World's Standard For Mechanical Pulp

"The World's Standard for Mechanical Pulp"...

. . . because it insures for each mill the high quality pulp that it requires . . . because each Norton Pulpstone is carefully engineered to meet each mill's individual requirements.

A Norton Pulpstone Engineer will study your mill and make specific recommendations based on your type of wood, your kind of grinders and the type of pulp you want to produce. He has available several types of abrasives (both ALUNDUM* and CRYSTOLON*), and a number of bonds — including the increasingly popular G bond. He can vary grit size, grit spacing, and stone hardness to suit your individual requirements.

Norton Pulpstones are produced in two modern plants–at Worcester, Massachusetts, and Hamilton, Ontario–assuring a dependable source of supply.

NORTON COMPANY, WORCESTER 6, MASS.
Norton Company of Canada Ltd., Hamilton, Ont.
EXPORT: Norton Behr-Manning Overseas Inc., Worcester 6, Mass.

NORTON

Abrasives - Grinding Wheels - Grinding and Lapping Machines
Refractories - Electrochemicals - Non-slip Floors - Norbide Products

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

Making better products . . . to make your products better

Introducing...

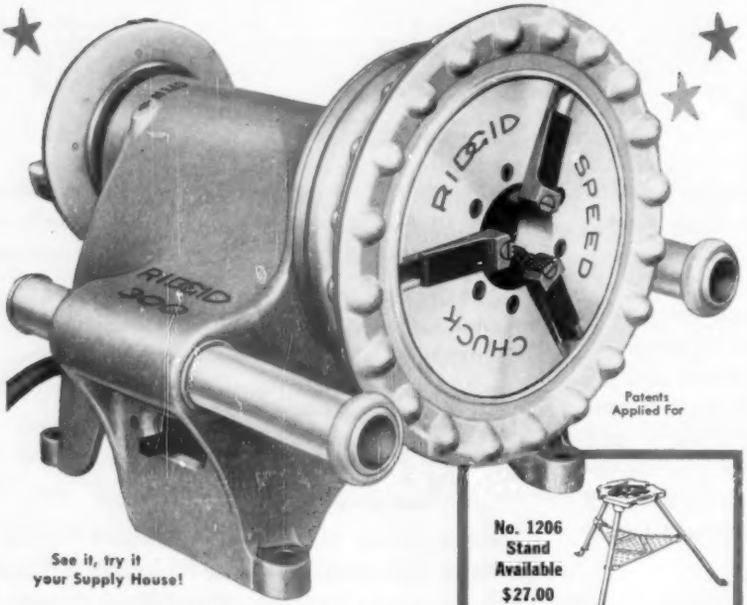
the ALL-NEW

RIDGID

300 Power Drive

$199.50

- Full 1/8" to 2" capacity
- Light-Weight · Heavy-Duty
- Unmatched RIDGID Quality



Patents Applied For

See it, try it your Supply House!

No. 1206 Stand Available $27.00

Designed and Manufactured by
THE RIDGE TOOL COMPANY
ELYRIA, OHIO, U. S. A.

New Weatherproof Motor
. . . Withstands Adverse Conditions

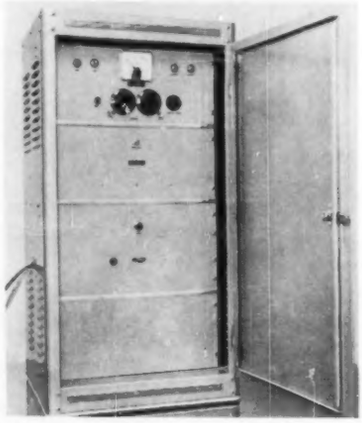
Applications: For use in outdoor type situations where motor is subjected to extreme moisture or other adverse operating conditions.

Advantages: An open motor that exceeds NEMA splash-proof requirements, all external parts are of corrosion-proof cast iron. Insulation system cannot absorb water. The rotor O.D. and stator I.D. are coated with a rust inhibitor. Special non-washing grease is used in the bearings which meter in just the right amount of grease from the reservoirs as needed. Stainless steel nameplate keeps motor information permanently accessible.

Specifications: Available in all standard speeds in sizes from one through 250 hp. Protective screening for ventilating openings to keep out rodents and snakes is available on request at no additional cost.

Supplier: **Reliance Electric and Engineering Co., 24701 Euclid Ave., Cleveland 17, O., REdwood 2-7000.**

Metal Detector
. . . Protects Machinery



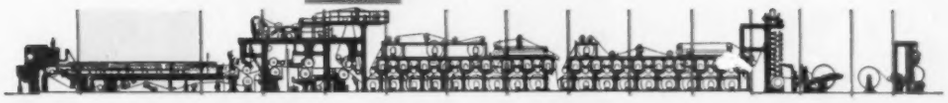
Applications: To keep metal objects from entering and ruining costly machinery.

Advantages: Simple to install and needing no maintenance, metal detector stops conveyors when any magnetic or nonmagnetic metal passes over detector coil. It will also activate any electrical circuit to stop chippers, sound alarms, or flash warning lights.

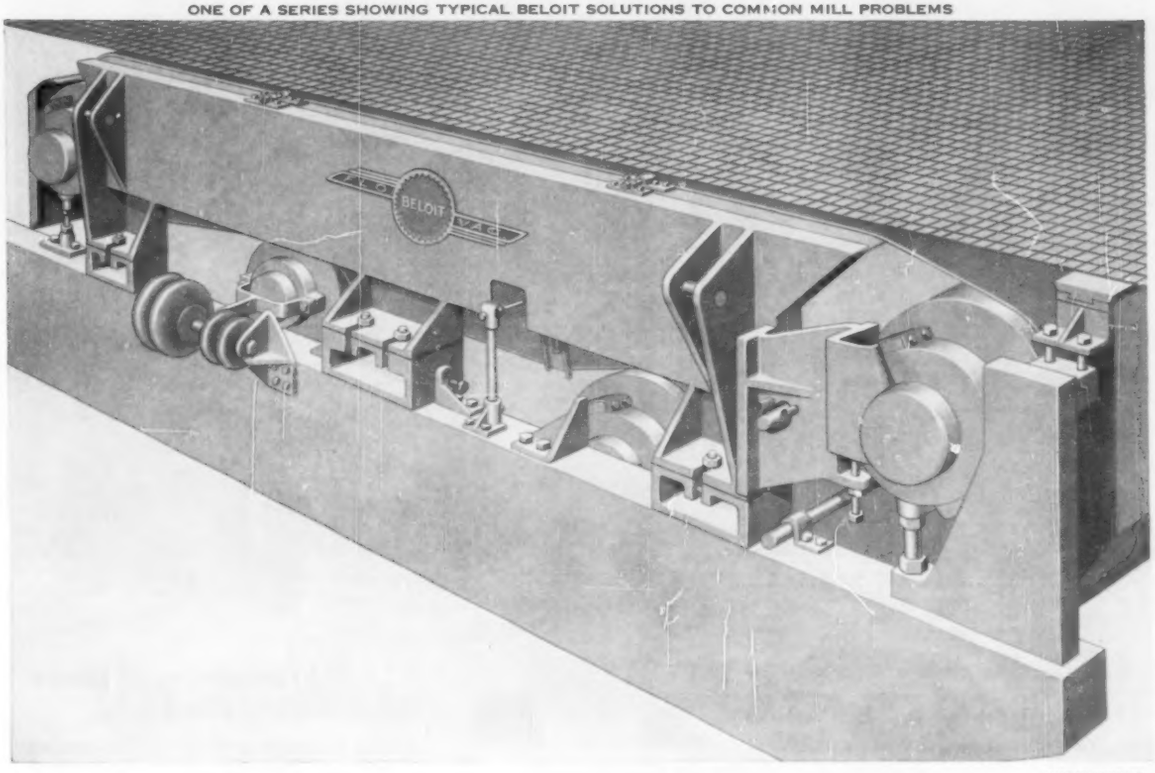
Specifications: Metal detector draws only 250 watts on 110 volts. Oscillator, control unit, power rectifier and receiver are unitized so parts are simply plugged in with no internal wiring. Detector coil needs no adjustment for temperature changes.

Supplier: **Rader Pneumatics, Inc., 1739 N.E. 42nd Ave., Portland, Ore., ATlantic 2-7767.**

BELOIT UNIT MODERNIZATION



ONE OF A SERIES SHOWING TYPICAL BELOIT SOLUTIONS TO COMMON MILL PROBLEMS



PATENT PENDING

FLO-VAC

Beloit's new suction unit increases productive capacity

For economical increase of productive capacity, investigate the advantages of the new equipment shown above. Flo-Vac, Beloit's new suction unit

- lengthens wire life
- permits more drainage of secondary stock on board machines
- increases production
- reduces Fourdrinier power demands

Find out just how Flo-Vac can fit into *your* modernization plans.

» ACT! *Let a Beloit Sales Engineer give you complete FLO-VAC details, or write to sales representative: Clark and Vicario Corp. North Tarrytown, N. Y.*

100 YEARS

BELOIT

PAPER MACHINERY

your partner in papermaking

Nathan W. Putnam to Dayton

. . . in Ohio, for R. T. Vanderbilt Co. (fillers, sizings, adhesives), from Kalamazoo, Mich. A graduate of the pulp and paper school at U. of Maine, he has been with Vanderbilt over two years.

Leidy Joins Waterbury & Sons

Formerly with Fraser Paper Ltd. for 6½ years at Madawaska, Maine, John Leidy will be sales rep in the land of Penjerdel (Pennsylvania-Jersey-Delaware), is based in Norristown, Pa. He has degrees in mechanical and administrative engineering.

Gedemer Joins Valley Iron

FRED GEDEMER has joined Valley Iron-Works Co., Appleton, Wis., as assistant chief engineer. He graduated from Marquette University in mech. engineering in 1949. He was employed by Beloit Iron Works as an engineer for two years, and since 1951 has been chief engineer of Nekoosa Foundry and Machine Co. of Nekoosa, Wis. He served in the Navy during World War II.

John R. Casey Moves Up

. . . at General Electric Co. to mgr. of user industries sales for New England. Mr. Casey, a native of Worcester, Mass., joined GE's engineering test program after graduating from Worcester Polytechnic Institute in 1937. He will relocate in the Boston area.

Joins Lockport Felt Co.

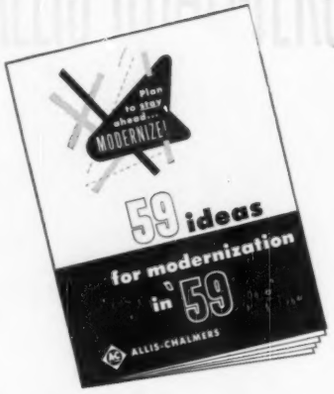
CLINTON L. LAW has joined Lockport Felt Co., Newfane, N. Y., and will work out of the home office in technical service, announces RAYMOND J. LEE, president. Mr. Law was formerly with United Board and Carton Co.

Raymond K. Baty, for David Brown, Inc.

. . . as engineering sales representative for its Gear Division in charge of Pacific Northwest territory, according to Stuart Walters, sales manager. David Brown manufactures and distributes Radicon speed reducers. Varicon variable speed reducers, and other gearing, with headquarters in San Leandro, Calif. Mr. Baty will be based at the factory branch office, 1224 S.W. Morrison St., Portland 5, Ore.

ALLIS-CHALMERS

ALLIS-CHALMERS



NEW brochure of ideas for modernizing

This booklet is based on the premise that modernization can start anywhere in your plant. It can be a single machine or operation . . . a better way of getting variable speed . . . a faster way to braze . . . or a newly available replacement. In fact, this type of updating is far more common than the sweeping change.

Get a copy of "59 ideas for modernization in '59" from your nearby A-C office or write Allis-Chalmers, Industries Group, Milwaukee 1, Wisconsin.

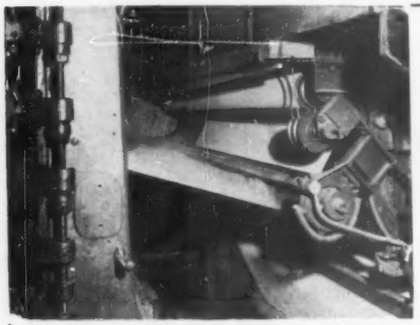
Examples of updating!

New motor development may eliminate premiums you've been paying for specially protected motors.

Electrical modernization includes placing substations close to machines being served.

ALLIS-CHALMERS

A-C
A-5850

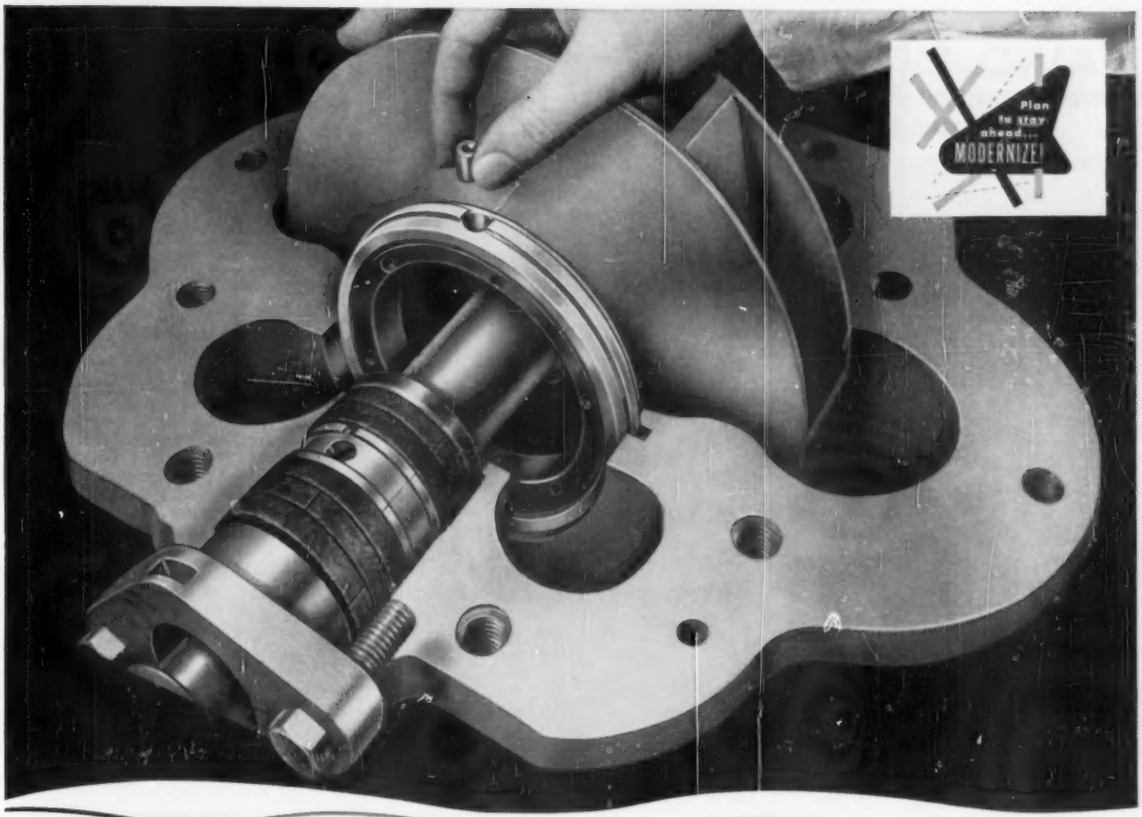


Improve Paper Quality
with
DUPASQUIER DRIPLESS STEAM SHOWER PIPE

- **WET END**—breaks up bubbles, disperses foam
- **DRY END**—increases sheet moisture, improves finish, lowers bulk and caliper
- **SAFELY USED** anywhere dripless steam desired

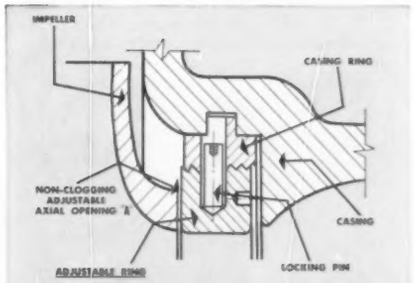
Custom Built for Any Machine
U.S.Pat. No. 2642314
in Canada No. 509451
Write for Illustrated Folder

J. H. DUPASQUIER 560 E. Clarendon St. Gladstone, Oregon



Eliminate pump jamming

...prolong high efficiency with adjustable wearing rings



Adjusting for Wear

All you remove is the top half casing and locking pin, then turn adjustable ring to desired clearance "A". Replace locking pin in newly drilled hole. Replace casing and pump is ready.

CONSTANTLY *right* clearances, non-clogging, and peak, lifetime efficiency are automatic when you specify adjustable wearing rings on Allis-Chalmers pumps.

Adjustments for wearing clearance are made without disturbing rotating elements, bearings or couplings; rings don't have to be replaced every time wear occurs; you save the cost of new rings; you save maintenance time and you get constant pump service.

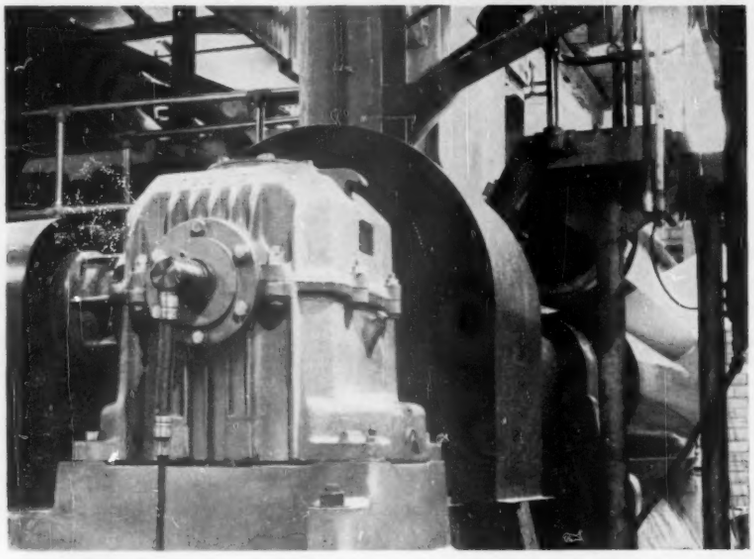
Allis-Chalmers pumps with adjustable wearing rings can mean real savings to you. Call your nearby A-C office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

A-5760

DAVID BROWN

at work around the world



This Canadian installation is typical of the cooperative service of David Brown companies around the world. Write for details.

...HELPING TO SMOOTH THE WORK OF A SMOOTHING PRESS!

It always matters how you gear a new installation such as this smoothing press at Rolland Paper Company's St. Jerome, Quebec mill. The gear in this case is a David Brown 17" spiral bevel unit — one of many used on the new machines by Millspaugh, famous for paper industry equipment.

This modern right angle drive installation can run continuously, hour after hour. Its 4 to 1 ratio will transmit 200 hp at 2,000 rpm pinion speed — with a high (98%) efficiency. These compact and sturdy spiral bevel gears are made in sizes from 6" to 60" by David Brown Industries.

The popular fan-cooled Radicons are also widely used in the paper industry — specified by original equipment manufacturers. They have learned Radicon's ability to withstand extremes of temperature, dust, dirt and rain — with initial low cost, and low maintenance.

Immediate delivery on Radicons 3" to 14" all standard ratios from 5:1 to 60:1. Radicon complete drives supplied by all authorized David Brown factory branches and distributors.

DAVID BROWN, INC.

999 Beecher Street, San Leandro, California
6025 Atlantic Blvd., Maywood, California
1224 S.W. Morrison St., Portland, Oregon

C. A. Rauh, New Sales Mgr. for Biggs Steel Foundry

. . . Mr. Rauh is a chemical engineering graduate of Notre Dame and has many inventions and technical developments to his credit. He was formerly with Goodyear, Goodrich and General Tire & Rubber Co. and served as consultant for a number of firms before joining Biggs Steel Foundry & Fabricating Co., Akron, O.

Jerardi ..... Glauner

Join Beloit Iron Works

P. J. "PETE" JERARDI returns to the paper industry after several years with a manufacturer of heavy machinery and will make his headquarters at Hamilton, O. for Beloit. EMERSON N. GLAUNER JR. joins Beloit's sales dept. in Beloit, Wis. He has had wide experience in the paper industry.

Wilbur ..... Austin

Huyck Field Service Engineers

. . . JOHN E. WILBUR will serve mills in the Middle Atlantic states. He is a graduate of the U. of Maine and has been associated with the paper industry over 10 years. RUPERT H. AUSTIN JR. will serve mills in Vt., parts of Mass., N.H. and N.Y. He is a graduate of Brown U. and was with Strathmore Paper Co. and National Aniline Div. of Allied Chemical and Dye before joining Huyck.

When you select

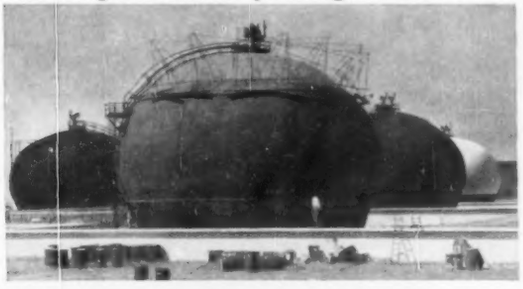
ERKOTE® Mastics

we furnish the product . . . . our trained crews do the job

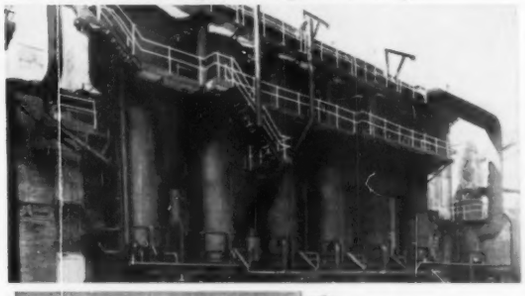
"One-source responsibility" for both materials and workmanship

When you select Erkote Mastics for waterproofing, weatherproofing, insulating or protection against corrosion, you get a guarantee that covers both the *product* and the *workmanship*. You deal with *one* responsible source because we manufacture our own mastic products and furnish our own trained crews and special equipment to apply them. In every industry where insulation and surface protection are essential, Erkote Mastic Coatings have a record of proven dependability. If you have a challenging protection problem, we can help you.

Insulating and weatherproofing



Corrosion resisting and vapor sealing

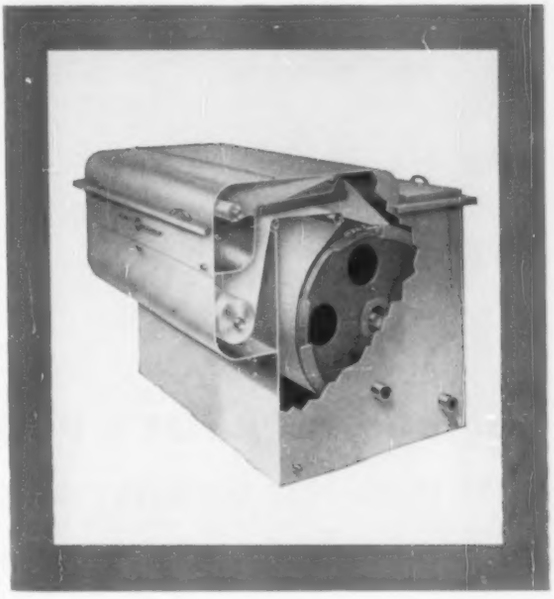


ERKOTE® TECHNICAL MASTICS

EARL PAINT CORPORATION
240 Genesee Street • Utica, New York
Sales Offices: Chicago • Pensacola • Philadelphia • Seattle

BELOIT UNIT MODERNIZATION

ONE OF A SERIES SHOWING TYPICAL BELOIT SOLUTIONS TO COMMON MILL PROBLEMS



PATENTED

Lubrication costs excessive?
Sludge deposits a problem?

Consider these advantages found in

Beloit Roll-Filter Lubrication System

Prompt, efficient filtering (no sludge deposits). Filtering medium can be renewed in minutes by one man (automatic if desired). Initial as well as replacement oil costs are held to a minimum. Clean, easy to maintain.

A patented Beloit Roll-Filter is available for any gallonage requirement—from 30 gpm systems to 100 gpm systems. Requires little space!

» **ACT!** *Write for specific information about a Beloit Roll-Filter Lubrication System to meet your needs. Write to Beloit Iron Works, Beloit, Wisconsin.*

100 YEARS

BELOIT
PAPER MACHINERY
your partner in papermaking

Here it is . . . the NEW

WARREN

811 HIGH DENSITY SCREW PUMP FOR CAPACITIES UP TO 750 TONS PER DAY

High Density Screw Pump*

that costs less than any other method of moving high density stock

Take lower initial cost . . . and add to this the fact of proven production economies. Then you'll see why the paper and pulp industry is hailing this Warren Pumps exclusive as one of the soundest, most economical developments in years.

Here are some of the things this new high density screw pump will do:

PUMP capacities to 750 TONS PER DAY (depending on density)
PUMP WATER as well as HIGH density stocks
DELIVER pressures to 300 PSIG
HANDLE densities to 18% AND HIGHER
ELIMINATE need for auxiliary feeding
PUMP stock with NEGLIGIBLE WORKING
DELIVER stock WITHOUT PULSATION
AVOID the DIRT and MAINTENANCE of other methods
PERMIT DIRECT DRIVE or V-BELT DRIVE
SAVE BUILDING COSTS by installing deckers on ground floors

This is no drawing board dream. These pumps have undergone the most severe field tests for nearly two years . . . and results are unquestioned!

*Patent pending

Tell us about your own high density stock pumping problems. Or simply write for more complete information . . . now!

WARREN

CENTRIFUGAL SCREW RECIPROCATING GEAR

WARREN PUMPS, INC.

WARREN, MASSACHUSETTS

PP-42

LITERATURE

"Creative Craftsmanship in Steel"

. . . describes coordinated engineering, fabrication and erection services offered by Chicago Bridge & Iron Co. The four-page booklet also illustrates and describes CB&I-built storage and pressure vessels, Hortonclad and special alloy structures and the Horton Pickling Process. For free copies, write Chicago Bridge & Iron Co., 2421 McCormick Bldg., Michigan Ave., Chicago 4, Ill.

New Spot Welder Developed

Simple settings and an automatic timing feature make a newly-developed spot welder for applying and repairing stainless steel face wires and bands very easy to operate. It has extra-heavy relay contacts, an accurate timer which automatically governs the welding cycle, and silver plated contact surfaces. The welder is operated by pressing its welding tip down on the wire or band lap joint as it rests on a bottom electrode. When the correct, preset amount of hand-pressure is reached, the unit automatically fires, making the desired spot-weld. For further information, ask for Bulletin J3-7, Improved Machinery Inc., Nashua, N.H.

Horizontal Size Press

Patton Brochure A-15 includes complete description of horizontal size presses, illustrations and engineering diagrams of typical installations. Also includes case histories of actual installations. Patton Manufacturing Co., Inc., 1805 West Pleasant Street, Springfield, O.

New Worm Gear Drive Bulletin

A new eight-page, illustrated booklet—*Why Worm Gear? Why Cleveland?*—provides useful information on worm gearing in general, points out the advantages of this type of gearing and gives pertinent design and manufacturing facts. Bulletin 150 is available upon request to, Cleveland Worm & Gear Co., 3249 East 80th St., Cleveland 4, O.

Cost Is Reduced For Aluminum Rigid Conduit

"Aluminum rigid conduit can now be purchased and installed at a cost comparable to, or less than, that of conventional conduit," says "*Alcoa Aluminum Electrical Rigid Conduit*," published by Aluminum Company of America. The new booklet outlines briefly the mechanical and electrical advantages of aluminum rigid conduit.

Advantages of aluminum conduit include: Resistance to corrosion; non-magnetic; light weight; good appearance; non-toxic; non-sparking; freedom from staining, and low cost of installation. The booklet is available on request to Alcoa sales offices or to 749 Alcoa Bdg., Pittsburg 19, Pa.

MEETING DATES CALENDAR

Dec. 4-6
APPMSA Pacific Coast Div.
Sir Francis Drake Hotel, San Francisco, Calif.

Dec. 9
Ohio Section, TAPPI
American Legion Hall, Middletown, O.

Dec. 12
New England Section, TAPPI
Roger Smith Hotel, Holyoke, Mass.

Jan. 13
Lake States Section, TAPPI
Appleton, Wis.

Jan. 14-15
Annual Pulp and Paper Conference
Western Michigan U., Kalamazoo, Mich.
TAPPI-APPMSA Joint Meeting
Hotel Harris, Kalamazoo, Mich.

Jan. 20
Pacific Coast Section, TAPPI
Aberdeen, Wash.

Jan. 23
Southeastern Section, TAPPI
Gen. Ogelthorpe Hotel, Savannah, Ga.

Jan. 27
Miami Valley Div. APPMSA
Manchester Hotel, Middletown, O.

Jan. 27
Golden Gate District, TAPPI
Claremont Hotel, Berkeley, Calif.

Jan. 28-30
CPPA Annual Meeting
Queen Elizabeth Hotel, Montreal, Que.

Feb. 2-6
Canadian Maetrials Handling Exposition
Exhibition Grounds, Toronto

Feb. 12
Michigan Div., APPMSA
Hotel Harris, Kalamazoo, Mich.

Feb. 22-26
Paper Week—APPA, TAPPI, SAPI
Waldorf-Astoria and Hotel Commodore, New York

Mar. 16-20
National Assn. of Corrosion Engineers, Pulp and Paper Symposium
Hotel Sherman, Chicago, Ill.

Mar. 23-26
Folding Paper Box. Assn. of America
Drake Hotel, Chicago, Ill.

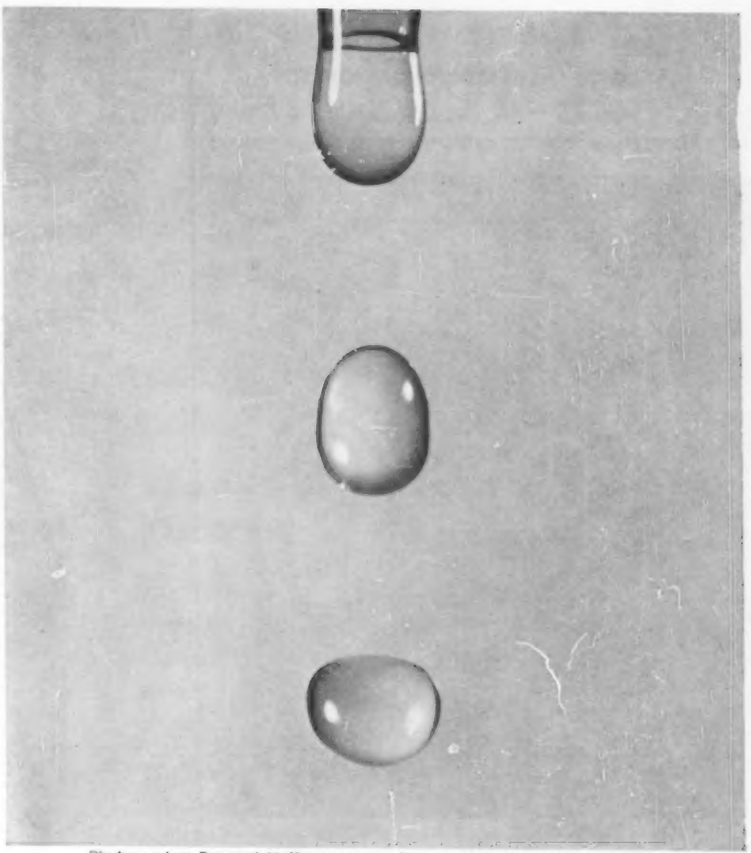
Apr. 21-28
Netherlands Packaging Exhibition EUROPAK 1959
RAI Exhibition Halls, Amsterdam, The Netherlands

Apr. 30-May 3
Penn-Jer-Del Div. APPMSA
Robert Treat Hotel, Newark, N. J.

May 21-23
Pacific Coast Div. OPPMSA and Pacific Coast Section, TAPPI—Multiple Water Use Seminar
Gearhart Hotel, Gearhart, Ore.

May 25-27
TAPPI Coating Conference
Hotel Statler, Boston, Mass.

June 2-4
APPMSA National Meeting
Shamrock-Hilton Hotel, Houston, Tex.



Photographer Bernard Hoffman uses a tiny droplet of water, forming and falling, to illustrate time sequence.

Controlling Time in Fluid Engineering

Even in simple hydrodynamic situations like the one pictured above, time sequence is measured in micro-seconds. More often than not, other factors—such as pressure, volume and flow—all tend to complicate fluid time control. That's where the engineering leadership of S. Morgan Smith can help you most.

SMS Rotovalves, for example, will give you the closest control of closing time . . . as quick as one second or as slow as needed. Their fast initial shut-off limits reversal of flow, and closure is positive and drop-tight. Rotovalves are easier to operate, requiring less power for mechanical or electrical operation, and their full line opening means less head loss and lower pumping costs.

SMS offers you a complete line of standard Rotovalves, Ball Valves and R-S Butterfly Valves, as well as special application engineering help. To obtain full information, call our nearest representative, or write S. Morgan Smith Company, York, Penna.

S. MORGAN SMITH HYDRODYNAMICS

AFFILIATE: S. MORGAN SMITH, CANADA, LIMITED, TORONTO

Rotovalves • Ball Valves • R-S Butterfly Valves • Free-Discharge Valves • Liquid Heaters • Pumps • Hydraulic Turbines & Accessories

BELOIT UNIT MODERNIZATION

ONE OF A SERIES SHOWING TYPICAL BELOIT SOLUTIONS TO COMMON MILL PROBLEMS

Need replacement bearings?

Whether you need a paper machine bearing for stock or emergency replacement call on Beloit.

Beloit's bearing inventory offers a wide range of bearings commonly used in the paper industry. As a matter of fact, Beloit Iron Works maintains the largest stock of paper machine bearings in the world. Call on Beloit first. You will be pleased with the price and the prompt delivery.

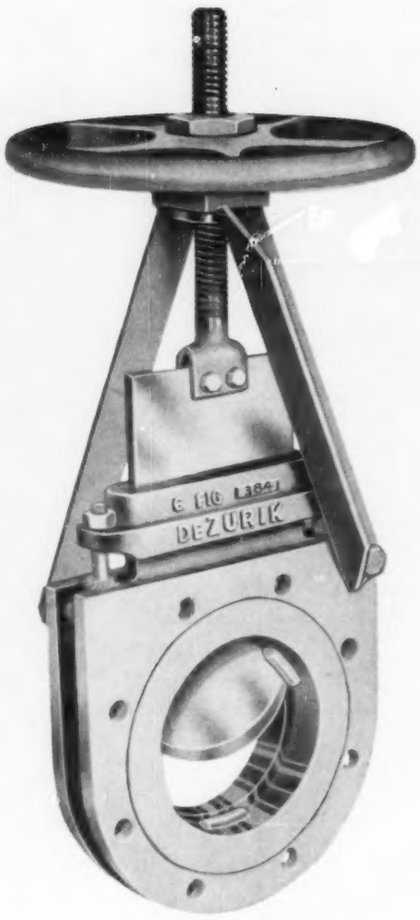
» ACT! *Complete inventory enables us to meet emergency needs promptly. Send inquiries to Beloit Iron Works, Beloit, Wisconsin.*

100 YEARS

BELOIT

PAPER MACHINERY

your partner in papermaking



THE FINEST BONNETLESS KNIFE GATE VALVE YOU CAN BUY!

They're available in sizes 3" thru 30" and in a complete range of metals. For more information, write for Bulletin 300.

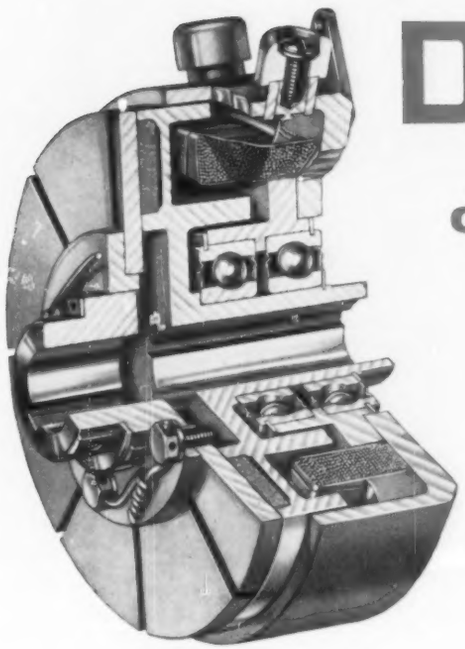
DeZURIK CORPORATION

SARTELL, MINNESOTA.

New—Small Sizes!

EATON DYNA-TORQ

MAGNETIC-FRICTION CLUTCHES and BRAKES



STATIONARY-FIELD, BEARING-MOUNTED DYNA-TORQ CLUTCH

Now Available in a Full Line from 1¾" to 15" Diameter

Eaton Dyna-torQ Magnetic-Friction Clutches and Brakes provide a simple, accurate, responsive method of controlling power and motion in today's complex production and processing machines.

The new smaller sizes and new design types of Dyna-torQ Stationary-Field Clutches and Brakes enable Eaton to offer a well rounded line, including flange-mounted and bearing-mounted clutches, and replaceable-face brakes. Unique features of design and construction result in worthwhile maintenance cost savings. Dyna-torQ units, easily and quickly installed on new machines or existing plant equipment, deliver many highly desirable advantages.

Dyna-torQ Magnetic-Friction Equipment Offers these Important Advantages:

- ★ Accurate power control
- ★ Dependable motion control
- ★ Rapid response
- ★ Easy "built-in" installation
- ★ Low maintenance costs
- ★ Compact plug-in type controls—may be remotely mounted
- ★ Inter-changeability of parts

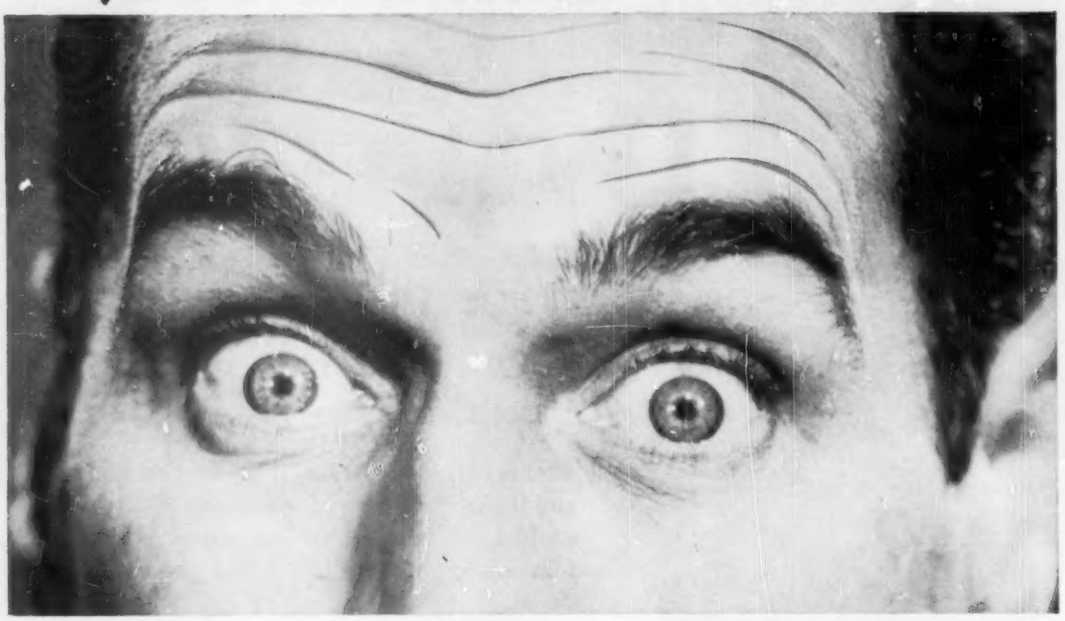
Send for this new illustrated bulletin giving complete description and specifications covering Dyna-torQ Stationary-Field Clutches and Replaceable-Face Brakes.

Dyna-torQ Equipment is Available through Dynamatic Distributors in all Leading Cities

EATON

DYNAMATIC DIVISION
MANUFACTURING COMPANY
3307 FOURTEENTH AVENUE • KENOSHA, WISCONSIN

Dryer Felt EMERGENCY?



call Brandon Sales for immediate service

When a dryer felt emergency comes up, quick service is essential. Good service is our ambition, and we thrive on doing the impossible in an emergency.

Brandon Sales has all types of dryer felts, and our representatives are trained to service every dryer felt need.

Wherever you are in the United States, call us for quick emergency service, or for your regular dryer felt needs.

Brandon Makes All Three—Asbestos, Semi-Asbestos, Cotton.

For immediate attention to your dryer felt problems, write:

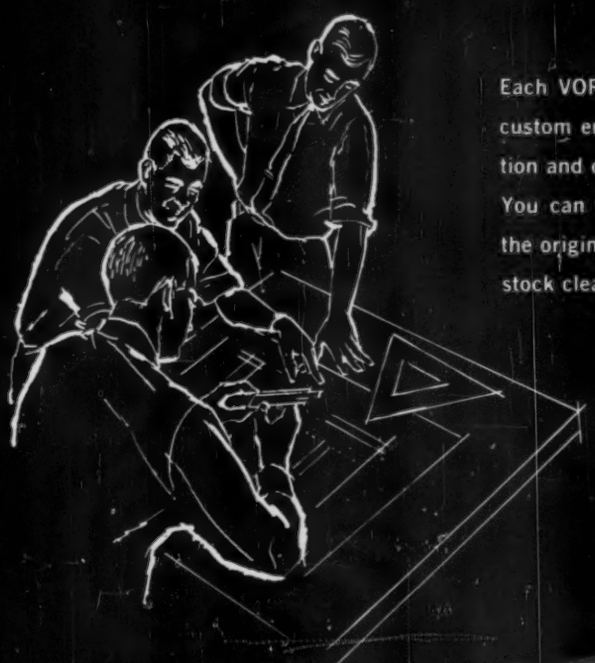
Brandon Sales, Inc.
Drawer L, Branwood Station
Greenville, South Carolina

Representatives:
Northern and New England States
Orton Corporation, Fitchburg, Mass.
Midwestern States
Frank Clawson, Kalamazoo, Mich.
West Coast
M. J. Maguire, Portland, Oregon
Southern States
R. S. (Bob) Davis, Greenville, S.C.

BRANDON DRYER FELTS

Stock cleaning equipment

Specifically designed for your needs



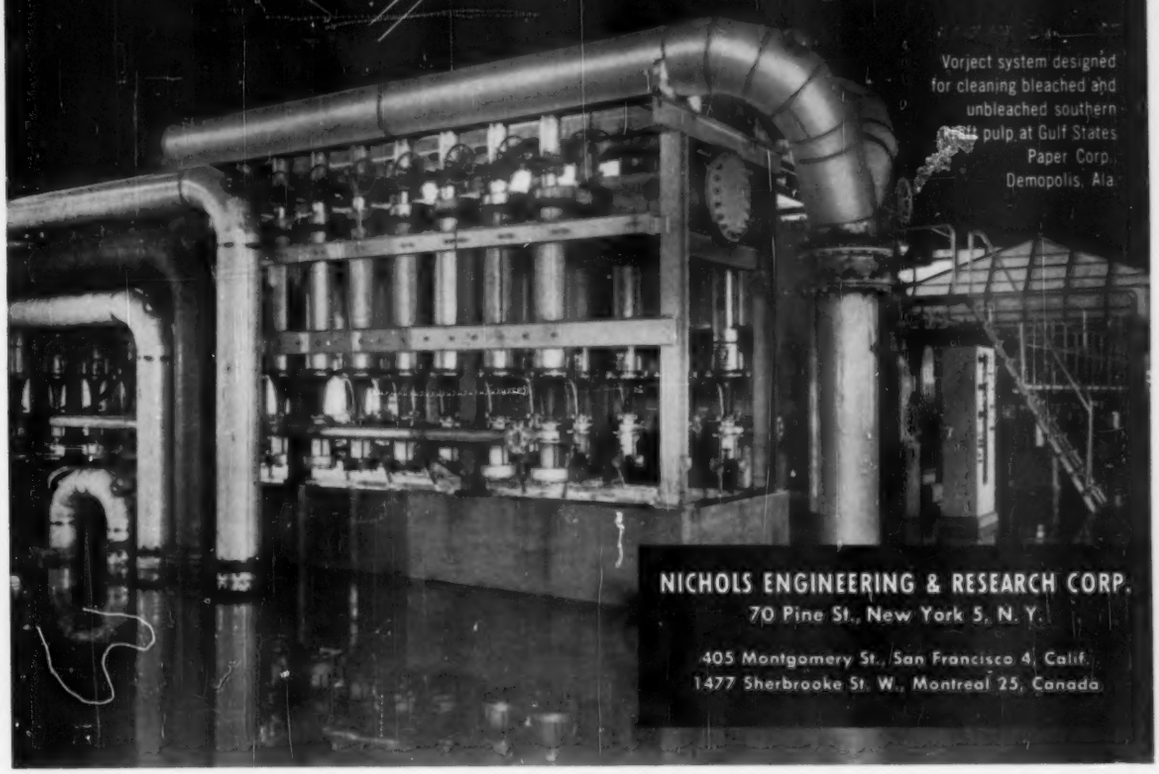
Each VORJECT, VORVAC or VORTRAP system is custom engineered to fit requirements for deaeration and cleaning of your specific stock.
You can benefit from the experience of Nichols, the original designers and suppliers of centrifugal stock cleaners.

WRITE FOR BULLETIN No. 131

NICHOLS FREEMAN

VORJECT® Trade Mark

Cleaner



Vorject system designed for cleaning bleached and unbleached southern kraft pulp at Gulf States Paper Corp., Demopolis, Ala.

NICHOLS ENGINEERING & RESEARCH CORP.
70 Pine St., New York 5, N. Y.

405 Montgomery St., San Francisco 4, Calif.
1477 Sherbrooke St. W., Montreal 25, Canada

AUTOMATION

a practical reality with AMERICAN PANTOGRAPH LIFT TABLES

AUTOMATION and American Pantograph Lift Tables go together to feed, lift and accumulate a variety of material because controls of any type can be used with the simple electric hydraulic system.

AUTOMATE individual machine operations, incorporate in conveying systems, or use at any location where mechanical lifting or lowering of material will reduce worker fatigue and increase production.

Model	Capacity	Vertical Travel	Collapsed Height Min.	Platform Size Min.
M-1170-1A	1,000#	31"	5"	18"x42"
M-1170-1B	2,000#	31"	6"	18"x42"
M-1170-1C	1,000#	48"	6"	18"x60"
M-1170-2A	4,000#	36"	7"	18"x48"
M-1170-2B	4,000#	36"	7"	24"x48"
M-1170-2C	3,000#	48"	7"	24"x80"
M-1170-2D	2,000#	60"	7"	24"x72"
M-1170-2E	6,000#	36"	8"	24"x48"

For detailed information on American Pantograph Lift Tables and how they can solve your lifting problems, write for bulletin AMC-5000.

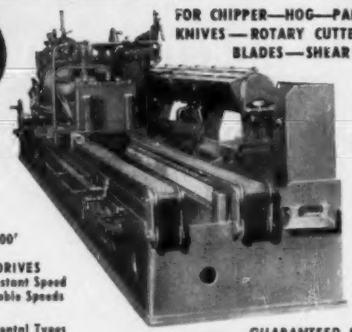
Factory field engineers and representatives throughout the USA and Canada.

American MANUFACTURING COMPANY INC.
2119 PACIFIC AVENUE
TACOMA 2, WASHINGTON, U. S. A.

HANCHETT KNIFE GRINDERS

MODEL AK AUTOMATIC

FOR CHIPPER—HOG—PAPER—VENEER KNIVES — ROTARY CUTTERS — DOCTOR BLADES — SHEAR BLADES, ETC



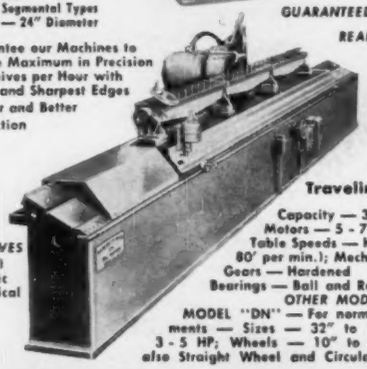
EXTRA HEAVY DUTY Traveling Wheel Type

Capacity— 84" to 396"
Motors— 7½ to 40 HP
Speeds—10' to 100' and faster
TRANSMISSION DRIVES
Mechanical—Constant Speed
Hydraulic—Variable Speeds
WHEELS
Cylinder or Segmental Types
16 — 20 — 24" Diameter

1. Guaranteed Construction
2. Finest Materials
3. Advanced Design
4. Quiet, Smooth Running and Entirely
5. Free of Shock or Vibration

GUARANTEED PERFORMANCE
REAL WORK HORSES

We Guarantee our Machines to Deliver the Maximum in Precision Ground Knives per Hour with the Finest and Sharpest Edges for Longer and Better Cutting Action



MODEL GK AUTOMATIC

HEAVY DUTY Traveling Table Type

Capacity — 32" to 196"
Motors — 5 - 7½ - 10 - 15 HP
Table Speeds — Hydraulic (10' to 80' per min.); Mechanical (Constant)
Gears — Hardened
Bearings — Ball and Roller Types

TABLE DRIVES
Mechanical
Hydraulic
Electrical

OTHER MODELS

MODEL "DN" — For normal knife requirements — Sizes — 32" to 108"; Motors — 3 - 5 HP; Wheels — 10" to 14" Diameter — also Straight Wheel and Circular Knife Grinders

HANCHETT MANUFACTURING COMPANY
Main Plant — BIG RAPIDS, MICHIGAN
West Coast — PORTLAND 1, OREGON

Greater Production of Higher Quality Pulp

- *in Less Time*
- *at Lower Cost*

This is the end result of the various processes and equipment which we have installed in pulp mills throughout North America. Send us details of your requirements.

Chemipulp Process Inc.
Watertown, N. Y.

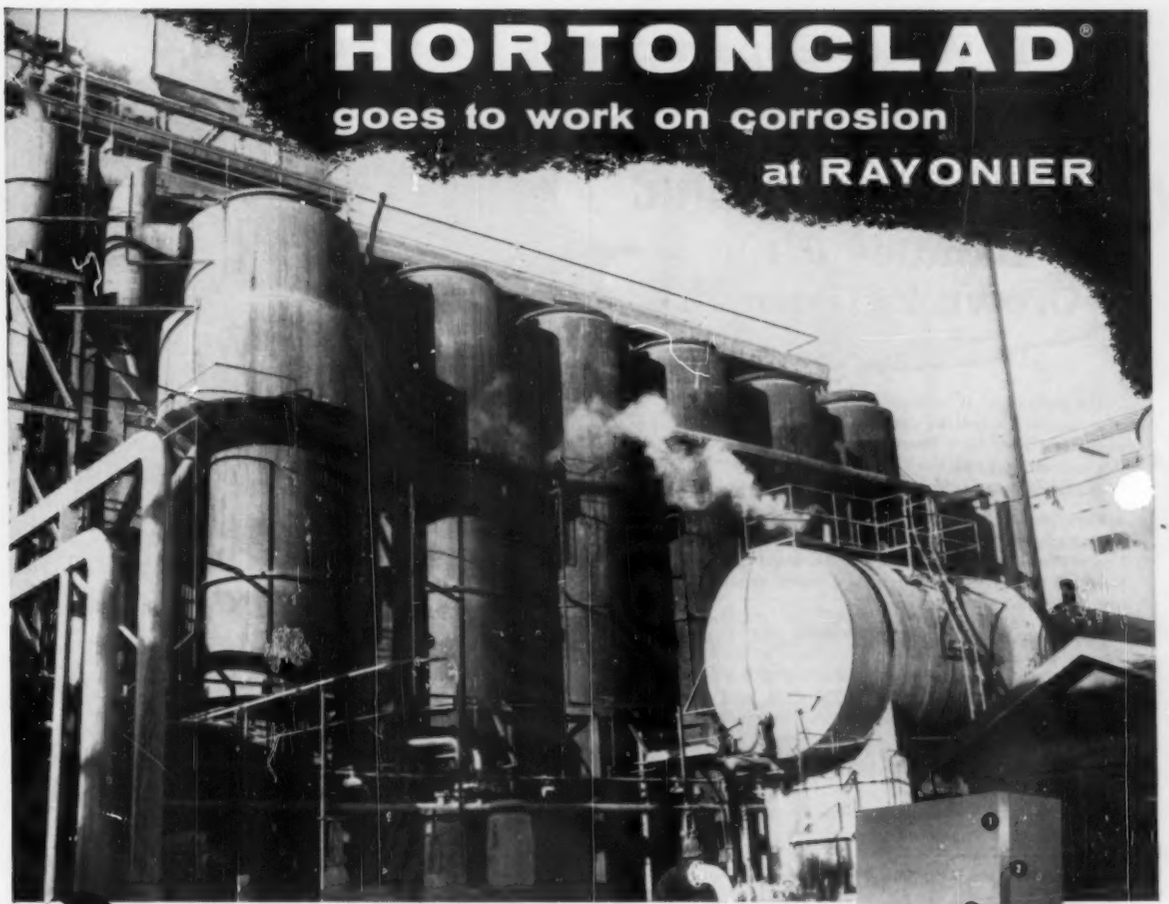
Associated with

Chemipulp Process Ltd., 253 Ontario St., Kingston, Ont.

•

Pacific Coast Representative
A. H. Lundberg, Inc., P. O. Box 202, Mercer Island, Wash.

HORTONCLAD®
goes to work on corrosion at RAYONIER

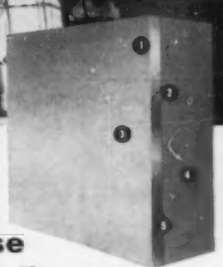


CB&I —built EVAPORATOR handles foam problem on black sulfate liquor

The corrosion-resistant properties of Hortonclad® were employed in the building of this six-body, sextuple effect Conkey® evaporator designed, fabricated and erected by CB&I for the Jesup, Georgia plant of Rayonier, Inc. Stainless steel Hortonclad was used for the No. 1 and No. 2 body, where protection from a high foaming type of sulfate black liquor was most needed. Structures were furnished through Ebasco Services, Inc.

Hortonclad, a CB&I composite metal having an integral and continuous bond, is an example of how CB&I's continuing program of *applied metallurgy* in steel plate construction is helping *us*—to help industry leaders attain better and longer performance life from storage and process vessels.

Write your nearest CB&I office for a copy of a bulletin which describes the extensive *co-ordinated* services and equipment which we furnish for the paper and pulp mill industry.



these benefits with HORTONCLAD

1. Uniform Thickness
2. High Strength Bond
3. Clean, Contaminant-Free Surface
4. Adaptability to Any Size or Shape
5. Special Combinations of Metals

Photo above: Compact unitized, "out-of-door" construction such as this, is typical of the way CB&I-built Conkey evaporators help insure low installation and erection costs and maximum use of space.

CB&I-built Conkey equipment includes:
Crystallizers • Evaporators • Filters

CB&I

Chicago Bridge & Iron Company

Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston • Kansas City (Mo.)
New Orleans • New York • Philadelphia • Pittsburgh • Salt Lake City
San Francisco • Seattle • South Pasadena • Tulsa
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, GREENVILLE, PA. and at NEW CASTLE, DELAWARE.

PP27

If Water Separation is *Your* Problem—

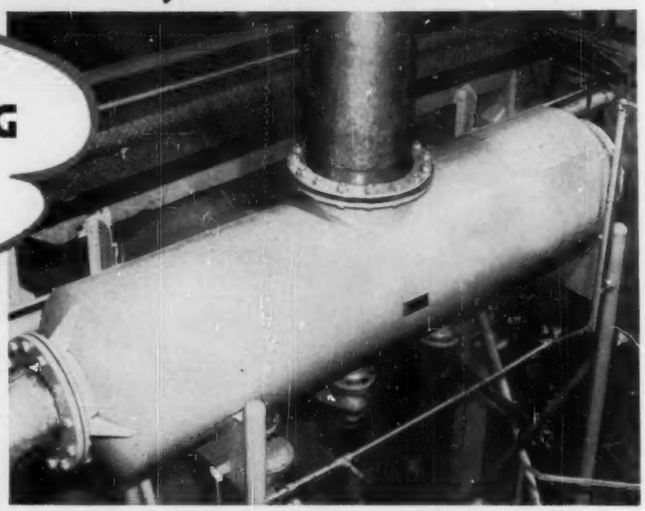
SEE HOW BURGESS-MANNING handles it for Crown Zellerbach!

The separation of entrained water from a stream of air or gas is a familiar problem to Burgess-Manning engineers. They have been called upon to perform this task many times since the first Burgess-Manning Water Separator Snubber was introduced.

The Water Separator installed in the Crown Zellerbach plant at Antioch, California by the Beloit Iron Works is typical. Because of the unusual requirements of this installation a special water separator was designed and built.

A horizontal installation, between the Mold-Yankee paper machine and a centrifugal exhauster, was required, with a 14" inlet at each end and a center 18" outlet. The capacity is 6500 CFM, and entrained water from the water seal is entirely removed.

In many Burgess-Manning Water Separation installations, unlike this one, exhaust silencing is also an important function.



Burgess-Manning Water Separator especially designed for horizontal installation and use with Mold-Yankee machine at Crown Zellerbach California plant.

If water separation or exhaust silencing is a problem, consult Burgess-Manning!

BURGESS-MANNING COMPANY

Sound Engineering

Industrial Silencer Division

9223 Sovereign Row, Dallas 35, Texas
Libertyville, Illinois

WAPAKONETA *Hi-Production* CHIPPER KNIVES

- *Produce more uniform chips*
- *Reduce downtime and waste*

TRADE MARK

THE WAPAKONETA MACHINE CO.

Since 1891

WAPAKONETA, OHIO

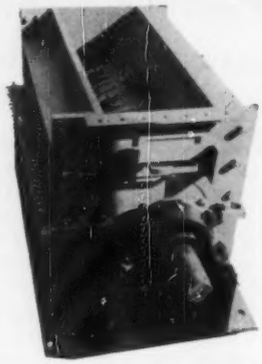
ALSO MANUFACTURERS OF:
VENEER KNIVES — PLANER KNIVES — PAPER KNIVES — HOG KNIVES

ENGINEERING PRODUCTS COMPANY Inc.

AUTOMATED ROLL HANDLING

Consulting and Contracting Engineers

122 South Michigan Avenue
CHICAGO 3, ILLINOIS
Telephone WAbash 2-8364



The Marvelous Montgomery

BLO-HOG

Patents Pending

The Only All-Purpose Hog In the World!

"SOLVES"

Four difficult problems for the paper industry

- Grinds any kind of bark and billets, wet or dry.
- Excellent as a re-chipper producing very low percentage of fines.
- For groundwood mills—grinds bull screen rejects in one pass, small enough for feeding into machines for final refining into pulp.
- Grinds groundwood pulp laps for complete drying to save 40% of freight bills.

West Coast Representative—Sumner Iron Works, Everett, Wash.
Canadian Representative—Canadian Sumner Iron Works, Vancouver, B.C.

JACKSONVILLE BLOW PIPE CO.

P. O. Box 3687 Jacksonville, Florida ph. EL 5-5671

RED-RAY

Infra-Red Gas Burners

The fast, economical, modern drying method:

GUMS-INKS-COATINGS

(POLYVINYL-STARCH-CLAY)

Write for information to:

Red-Ray Manufacturing Co., Inc.
318 Cliff Lane Cliffside Park, N. J.
Tel: WHitney 3-1000

Speaking of Pulpwood

Did you know there is an Owen Grapple especially designed for the pulp and paper manufacturing field? The independent tine action . . . an exclusive Owen patent . . . affords greater grabs and larger log loads.

Write today and get convincing facts and special illustrated pulpwood bulletin . . . free upon request.

The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO

New York City Philadelphia
Chicago Berkeley, Calif.
Southern Corporation, Charleston, S.C.

OVERLY'S INCORPORATED

FABRICATORS FOR THE PAPER INDUSTRY

DESIGNERS and FABRICATORS of
AIR MOVING EQUIPMENT . . .

ENGINEERED AIR SYSTEMS — MACHINE HOODS — TRIM CONVEYORS — AIR DRYING — MAKE UP AIR SYSTEMS — Westinghouse STURTEVANT FANS AND STEAM COILS

Use our Experienced Engineers in solving your air moving problems. You will find our direct approach practical. An inexpensive solution may be available to you.

OVERLY'S INC. BOX 468, NEENAH, WIS.

it's "Alaskan" for *Stainless Steel* FITTINGS

ELBOWS
TEES
CROSSES
REDUCERS
LATERALS

STAINLESS STEEL PIPE & FITTINGS
. . . for the Pulp and Paper Industry

ALASKAN COPPER Works
SEATTLE WASHINGTON

3600 E. MARGINAL WAY • SEATTLE • MA. 3-5800 • TWX SE-392

ALLOY CLADDING COMPANY, INC.

DIGESTER OVERLAY

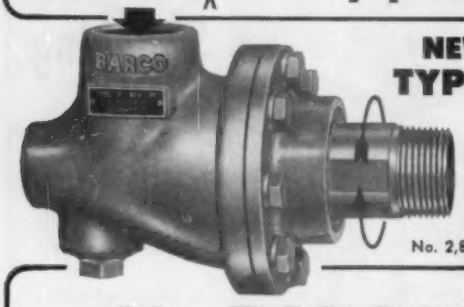
3649 KESWICK ROAD
BALTIMORE 11, MD. BELMONT 5-0776

RAY SMYTHE CO.

Pulp, Paper and Wood Mill Machinery and Supplies

729 S. W. ALDER STREET, PORTLAND 5, ORE. CA 3-0502

Need a Better rotary joint?



NEW TYPE C

Patent No. 2,836,439

-it's BARCO!

For countless applications, Barco's new Type C Rotary Joint will give you the best operating records you've ever had—*and for LESS COST!*

"CRACK-FREE" CHROME PLATED SLEEVE—A standard Barco feature. Minimizes corrosion, friction, wear. Stainless steel spring also standard.

RESISTS SEAL RING BREAKAGE—The spherical seal ring is under compression, not *tension*, loading. Self-adjusting for wear. Seal withstands shock loads and alternating hot and cold service.

WIDE SPACED BEARINGS—Two, instead of one . . . increased bearing area. No lubrication required. Lowest friction.

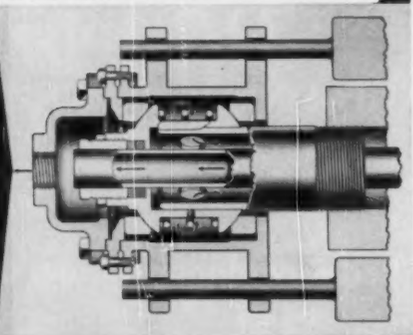
200 P. S. I. STEAM RATING—Heavy duty service at *no extra cost.* Eight sizes, ½" to 3". *Send for new Catalog 310 today.* **BARCO MANUFACTURING CO., 573N Hough Street, Barrington, Illinois.**

For High Speed Paper Machines with Revolving Syphon Pipes

In the Type LN Johnson Joints the revolving syphon pipe is made a part of the rotating assembly, yet is permitted longitudinal movement. Sealing is still accomplished without packing. Simple support rods carry all the weight of joint and connections, permit the rotating assembly to "float" freely inside. Special hangers and brackets adapt the mounting for machines with either open or enclosed gearing.

Johnson Joints fit all needs on paper machines, calenders, corrugators, waxers, embossers, roofing machines, printing presses. For full data on Type LN write for Bulletin N-2002.

Type LN Johnson ROTARY PRESSURE Joints "First in the paper industry"



THE JOHNSON CORPORATION
849 Wood St., Three Rivers, Michigan

COMPLETE ENGINEERING AND CONSTRUCTION SERVICES FOR THE PULP AND PAPER INDUSTRY

- **Design and Construction of Pulp and Paper Mills**
- **Steam and Hydro-Electric Power Plants**
- **Power Studies**
- **Reports and Appraisals**
- **Recovery Plants, Extensions and Alterations**

Send for our booklet, "Engineering, Design, Construction for Industry" Address Dept. R, Ebasco Services Incorporated Two Rector Street, New York 6, N. Y.

ENGINEERS · CONSTRUCTORS EBASCO BUSINESS CONSULTANTS

NEW YORK · CHICAGO · DALLAS · PORTLAND, ORE. SAN FRANCISCO · WASHINGTON, D. C.

WEYERHAEUSER

BLEACHED SULPHITE KRAFT CONTAINER BOARD

BLEACHED SULPHATE BLEACHED KRAFT PAPERBOARD

McKoy-Helgerson Company

GREENVILLE, S. C.

Paper and Pulp Mill Construction,

Equipment Erection and Piping

WANTED

Experienced paper export salesman with thorough knowledge American fine and coarse qualities. Fluent knowledge Spanish, Latin American markets and customers. Salary and bonus commensurate with responsibilities. Submit complete background Box P-87, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

SUPERINTENDENT

FOREMEN

Top pay and outstanding management benefits offered. Southeast location. Established pulp and paper manufacturer converting one Fourdrinier to coated board.

QUALIFICATIONS

SUPERINTENDENT – minimum of two years experience as Foreman or Superintendent in charge of production of board on Fourdrinier machine, including grades of coated board.

FOREMEN – minimum of two years as machine tender (or foreman) on Fourdrinier machine making coated board. Proven ability as tour foreman or leadership ability.

These are outstanding opportunities for qualified men. Interviews can be arranged locally or at plant.

For detailed information submit resume or inquiry in complete confidence to

Box P-92
PULP & PAPER
370 Lexington Ave.
New York 17, New York

CONVERTING SUPERVISOR

Unusual record in Labor Relations, Planning and Production. Eleven years with present employer. High regard for degrees but do not have any myself. Would not hesitate to take position outside the continental U.S.A. if benefits merit it. Complete resume furnished upon request. Reply Box P-79, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

MANAGEMENT MEN

Openings for Manufacturing Manager, Technical Control Supervisor and Foreman. Must have multiwall bag experience. Reply in confidence. Personnel Dept., Ames Harris Neville Co., 2303 8th St., Berkeley, Calif.

SALE: STAINLESS TANKS

10,500, 5700, 5200, 4500, 3000, 2000, 1000, 500 gal., horiz., & vertical. Stainless Heat Exchangers—1000, 425, 375, 135 sq. ft. Rotary Vacuum Filters, Centrifuges, Mixers, etc. PERRY EQUIPMENT CORP., 1403 N. 6th St., Phila. 22, Pa.

PAPER MEN

$5,000 to $50,000

SALES·PRODUCTION·TECHNICAL

Finding and landing THE ONE BEST JOB requires sound analysis, careful planning, proper contacts and skillful negotiation.

Paper men ourselves, and the only specialists in the world in our particular field, we assist responsible paper men to accelerate their careers by uncovering and developing THE SPECIFIC SITUATION that most exactly fits the needs of each individual we serve.

If you seek to better yourself, and your performance to date entitles you to our endorsement, we can and will help you. Contact us in absolute confidence for information regarding procedure.

GEO. M. SUNDAY & ASSO.

PAPER PERSONNEL CONSULTANTS
6 E. Monroe Chicago ANdover 3-1970

PAPER MEN

Whether you are an *employer* looking for the right man or an *applicant* looking for a better position, it will pay you to investigate our specialized placement service covering all phases of the Paper, Container and Packaging Industries.

- **PRODUCTION**
- **SALES**
- **MANAGEMENT**

A substantial number of exceptional men are now listed with us and are available almost immediately.

Whatever your requirements, contact us in complete confidence without involving any obligation.

FRED J. STEFFENS
Personnel Consultant to the Paper Industry

CADILLAC ASSOCIATES, INC.

6th Floor Phone: WAbash 2-4800
220 So. State St., Chicago 4, Illinois

WANTED
SALES ENGINEER

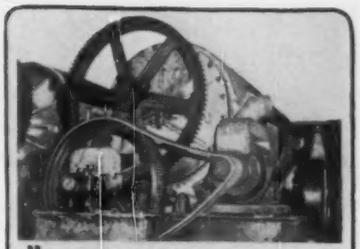
To develop sales of proven and accepted Paper Mill Equipment and to introduce newly patented equipment which has high potential. Guaranteed yearly salary based on previous experience, plus commission on sales made. Must have paper mill experience in the technical or line production departments. Travel Eastern U. S. from New England Home Office. Send resume in care of Box P-91, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

FOR SALE

One Carthage 38" x 5' hydraulic wood splitter, complete with push button controls. Purchased new in 1957 and in excellent condition. Can be inspected. Reply Box P-80, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

WANTED

Technical man with practical experience in Bagasse and Straw Pulp making, able to take complete charge of pulp mill in Mexico. Send full particulars to Box P-86, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.



"THIS LUBRICANT INCREASED CHAIN LIFE 4 TIMES"

—says FASTERFAT, Division of National Sea Products Limited

"Two years ago we switched from the lubricant we were then using to your LUBRIPLATE, and we are pleased to inform you that we have had very excellent satisfaction from its use. High speed silent chains on the drives of our fish meal cookers, which were formerly worn out in about six months, are still in service after two years."

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

PULP & PAPER's Directory of Consultants and Engineers

TIMBER ESTIMATORS ··· FORESTERS
SERVING THE INDUSTRY FOR OVER 40 YEARS
C. D. SHY & CO.
COMMERCE TITLE BLDG. MEMPHIS 3, TENN.

JOHN G. HOAD & ASSOCIATES, INC.
Consulting Engineers
Studies—Reports—Design—Field Supervision
Cold Caustic and NSSC with Recovery
Pulp Mills—Paper Mills—Power Plants
Ypsilanti, Michigan

W. H. RAMBO
CONSULTING ENGINEERS
For All Wood Industries
STUDIES—DESIGN—SUPERVISION
Loyalty Bldg., Portland 4, Oregon—Capitol 3-5101

LOCKWOOD GREENE, Engineers
Est. 1832
Plant Location • Site Studies • Paper • Pulp Mills
Mill Expansion • Water • Waste • Steam • Electric
Power and Utilization • Reports • Appraisals
New York 17, N. Y. 41 East 42nd St. | Spartanburg, S. C. Montgomery Bldg. | Boston 16, Mass. 316 Stuart St.

Pulp and Paper Specialists
CALKIN & BAYLEY, INC.
Industrial Consultants
50 East 41st St., New York 17, N. Y.
Lexington 2-1954

CHAS. T. MAIN, INC.
ENGINEERS
Process Studies, Design, Specifications and Construction Supervision
PULP AND PAPER MILLS
Steam Hydraulic and Electrical Engineering
Reports, Consultation and Valuations
80 Federal Street Boston 10, Mass.

Roderick O'Donoghue & Company
Consulting Engineers to the Pulp and Paper Industry
PULP MILLS—PAPER MILLS
IMPROVED PROCESSES — DESIGNS — REPORTS
420 Lexington Avenue New York City 17

ALVIN H. JOHNSON & CO.
INCORPORATED
●
Pulp and Paper Mill
Consulting and Designing Engineers
Serving the Pulp & Paper Industries Since 1929
●
415 Lexington Ave. New York 17, N. Y.

CENTRAL STATES ENGINEERING, Inc.
Consulting Engineers
Pulp and Paper Mills and Allied Operations,
High Yield Pulping Processes, Steam,
Power and Distribution, Waste Treatment,
Water Supply. Survey and Reports.
1000 West College Ave. Appleton, Wisconsin

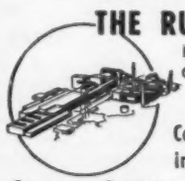
Water and Waste Specialists
MALCOLM PIRNIE ENGINEERS
Consulting Civil and Sanitary Engineers
25 West 43rd St. New York 36, N.Y.

THE LUMMUS COMPANY
for over half a century
Engineers and Constructors for Industry
PULP AND PAPER MILL DIVISION
design, construction, reports, consultation
New York, Chicago, Houston, Montreal, London, Paris, The Hague

Container and Material Testing
THE DON L. QUINN COMPANY
224 West Kinzie Street, Chicago 10, Ill.
Independent tests, studies, surveys, and consultations
Member: ASTM, TAPPI, FPRS

S. J. BAISCH Associates
Consulting Engineers
104 East Second Street, Kaukauna, Wisconsin
PHONE ROckwell 6-3521
Specializing in: pulp—paper—converting—power —surveys & reports—corrosion—design

STEVENSON & RUBENS
CONSULTING ENGINEERS
761 Olympic National Bldg. Seattle 4, Wash.
MU 1244
PULP AND PAPER MILL DESIGN

THE RUST ENGINEERING CO.
PITTSBURGH • BIRMINGHAM • BOSTON
Offices in Principal U.S. and Canadian Cities
Engineers · Constructors

Complete Service for PULP and PAPER MILLS including all auxiliaries and byproducts.
Surveys • Reports • Design • Construction • Modernization

TREE FARM MANAGEMENT SERVICE, INC.
Consulting Foresters
FOREST INVENTORIES, MANAGEMENT PLANS
UTILIZATION & RAW MATERIAL SURVEYS
1166 7th Ave. West Eugene, Oregon
Member, Association of Consulting Foresters

STONE & WEBSTER
ENGINEERING CORPORATION
Design and Construction
PULP and PAPER MILLS
PROVEN PROCESSES
NEW YORK · BOSTON · CHICAGO · PITTSBURGH · HOUSTON · SAN FRANCISCO · LOS ANGELES · SEATTLE · TORONTO
REPORTS APPRAISALS CONSULTING ENGINEERING

PULP & PAPER ADVERTISERS' INDEX

Alaskan Copper Works 159
Albany Felt Co. 17
Allis Chalmers Mfg. Co. 146-7
Louis Allis Co. 127
Alloy Cladding Co., Inc. 159
American Cyanamid Co. 32-33
American Hoist & Derrick Co. 111
American Manufacturing Co. 156
American Pipe & Construction Co. . 45
American SF Products 12
Appleton Machine Co. 23, 39
Appleton Wire Works, Inc. 121
Associated Business Publications ... 104

Barco Mfg. Co. 160
Bauer Bros. 125, 140
Beloit Iron Works 145, 149, 152
Bird Machine Co. 2
Black-Clawson Co. 51-52
John W. Bolton & Sons, Inc. 4
Brandon Sales, Inc. 154
Bristol Co. 34
David Brown, Inc. 148
Buffalo Pumps 14
Burgess-Manning Co. 158
H. W. Butterworth & Sons Co. 132

Cameron Machine Co. 10
Carthage Machine Co. 117
Chemipulp Process Inc. 156
Chicago Bridge & Iron Co. 157
Classified Advertising 160-1
Combustion Engineering 129
Cooper Alloy Corp. 30
Corn Products Sales Co. 86
Crane Co. 20

DeZurik Corp. 152
Dominion Engineering Co. Ltd. ... 24
Dorr-Oliver, Inc. 102-3
J. H. Dupasquier 146
E. I. duPont de Nemours & Co. (Inc.) 48-49

Earl Paint Corp. 149
Eastwood-Nealley Corp. 128
Eaton Mfg. Co. 153
Ebasco Services, Inc. 160
Eichleay Corp. 87
Electric Steel Foundry Co. 141
Emerson Mfg. Co. 4
Engineering Products Co. 158

Falk Corp. 99
Fibre Making Processes Inc. 118
Fischer & Porter Co. 90
Fiske Bros. Refining Co. 161

Gilbert & Nash Div. 39
Glidden Co. 43
Gottesman & Co., Inc. 6

Hanchett Mfg. Co. 156
Hercules Powder Co. 28
Hooker Chemical Corp. 53
Howard Smith Paper Mills Ltd. 44
J. M. Huber Corp. 25
F. C. Huyck & Sons 88-89, 140

Improved Machinery Inc. inside back cover
International Harvester Co. 108

Jacksonville Blow Pipe Co. 158
Johns-Manville Corp. 106-7
Johnsen, Jorgensen & Wettre, Ltd. . 85
Johnson Corp. 160
E. D. Jones & Sons Co. 93

Knox Woolen Co. 163
Koppers Co., Inc. 91

Link-Belt Co. 122
Lobdell-United 38
Lodding Engineering Corp. 40
Lubriplate Div. 161

McKoy-Helgerson Co. 160
Manchester Machine Co. 97
Marathon Div. of American Can .. 29
Midwest Piping Co., Inc. 37
Mixing Equipment Co. 133
Morden Machine Co. 101
D. J. Murray Mfg. Co. 134

Nash Engineering Co. 142
Naylor Pipe Co. 100
Nichols Engineering & Research Corp. 155
Nopco-Chemical Co. 46
Northwest Copper Works, Inc. 124
Norton Co. 143

Overly's, Inc. 159
Owen Bucket Co. 159
Ovalstrapping Inc. 135

Perkins-Goodwin Co. ..... back cover
Philadelphia Gear Corp. 92
William Powell Co. 26
Puget Sound Pulp & Timber Co. .. 31

Rader Pneumatics, Inc. 126
Red-Ray Mfg. Co., Inc. 159
Reliance Electric & Engineering Co. 105
Republic Steel Corp. 94-95
Rice Barton Corp. 1
Ridge Tool Co. 144
Riegel Paper Corp. 35
Rosenblad Corp. 19
J. O. Ross Engineering Corp. 120

Scapa Dryers, Inc. 8
Shell Chemical Corp. 27
J. E. Sirrine Co. 136
F. L. Smidth & Co. 16
S. Morgan Smith Co. 151
Ray Smythe Co. 159
Soderhamn Machine Mfg. Co. 110
Solvay Process Div., Allied Chemical Corp. ..... inside front cover
Sonoco Products Co. 96
A. E. Staley Mfg. Co. 98
Stebbins Engineering & Mfg. Co. .. 42
Stowe-Woodward, Inc. 50
Sumner Iron Works 130
Swenson Evaporator Div. 22

Texas Gulf Sulphur Co. 21
Thew Shovel Co. 109
Thurso Pulp & Paper Co. 41
Titanium Pigment Corp. 137
Torrington Co. 131

United Engineering & Foundry 38
U. S. Rubber Co. 119

Valley Iron Works 36
R. T. Vanderbilt Co. 54
Mapakoneta Machine Co. 158

Warren Pumps Inc. 150
West End Chemical Co. 138
Weyerhaeuser Timber Co. 160
Whiting Corp. 22
Wichita Clutch Co. 47
Wyatt Metal & Boiler Works 18

Knox Felts

KNOX WOOLEN COMPANY

CAMDEN, MAINE

America's First Manufacturer of Endless Paper Machine Felts

The Last Word PULP & PAPER Editors' Page

"Merry Christmas and Happy New Year" From the PULP & PAPER Staff

In this issue is a report from Jack Kimberly, big chief of the APPA, who says 1959 is going to be a good year —5% to 7% better. That's just one good reason, of course, for having a really happy Christmas and New Year.

In a magazine that serves the major forest products industry, trees are always important. When Christmastime comes around, those who live and work in the pulp, paper and paperboard industries feel right at home. Because trees are so much a part of the Christmas scene and have been for many centuries. Our readers live and work close to trees all the year, or the products of their work are made from trees. Pine, balsam fir and spruce make good pulp, and beautiful Christmas trees, too. These trees are an important part of the Christmas scene, as they have been for many centuries.

No one—and we mean no one—is more cognizant of the need for keeping the trees growing and cultivating more and more trees than the people who work in this industry. No group has done more to preserve and increase our forests. That's on the record for all to see.

We just thought with Christmas approaching, this point might be worth mentioning. From the viewpoint of the trees, then, who deserves a merrier Christmas? So, a Merry Christmas and Happy New Year to you all!

"Wilderness" Bill Comes Up Again

The "skids are greased" for swift enactment of so-called "wilderness" legislation when a new Congress assembles next year in Washington. The bill, with a new title, will embody a few concessions to marginal oppositionists, but still qualifies as a form of missile aimed at restricting millions of acres of federal lands to minimal use.

Why not similar bills for skiing, boating, or for mining, grazing, harvesting?

Although the avowed objective of a wilderness bill is to preserve federal lands for aesthetic, recreational, historical and other "public purposes," the bill specifically forbids construction of roads and the use of motor vehicles, motorized equiment, motorboats, aircraft, mechanical transport and structure erection except for administration.

As a special privilege measure it isn't very creative; not even for the small percentage of rugged type people who might occasionally participate in such activities. In the West—where the wilderness advocates are attempting to withdraw millions of acres from multiple use management—there are already 161,000,000 acres in governmental ownership available to those wanting to "get away." This includes 140 million acres of national forests, 13.5 million acres of national parks, monuments and recreation areas, 6.8 million of wildlife refuges, and 725,000 acres of state parks.

In addition to being of no direct concern to more than a minute percentage of the population, this program is distinguished by providing a genuine problem to federal forest managers charged with protection from fire, insects and disease. Control, besides being physically difficult in these inaccessible areas, is complicated by a serious question as to the advisability of investing great sums in protecting forests under multiple use management—regardless of ownership—adjacent to the wilderness areas. To do so risks having epidemics of fire or pests spilling out from the wilderness areas onto the productive lands.

Another tragic aspect of the wilderness program concerns the wastage of productive potentials on withdrawn lands. Practical land management embraces utilization suited to the property's most productive uses but does not preclude other uses. The wilderness advocates not only spell out singular uses for the land but the bill levies limitations on how such uses shall not be carried out.

Enactment of the bill would authorize establishment of a National Wilderness Preservation System which would forever preclude management, harvest and productive use of 50 million acres of federal lands in the West.

Texas Is Still Bigger Than Alaska's Actual State Area

In one important respect, Alaskans may not have as much to cheer about as you may think.

Geographically Alaska is a big place, 2.16 times as large as Texas. But under provisions of the statehood act for transferring federal lands to state ownership (ostensibly opening it up for private ownership and establishing a tax base), 73% of Alaska would still be in federal ownership.

Besides, there is more than a little doubt whether or not these specified ownership transfers will be entirely consummated due to the restrictive time limitations (25 years), the required approval of Secretaries of the Interior and of Agriculture, respectively, and survey costs which must be borne by the infant state.

The statehood bill provides that over a 25 year period Alaska may select 102,550,000 acres from unreserved vacant lands, 400,000 acres from national forests, 400,000 adjacent to established communities. Even if all this came to pass the state would still be able to claim but 27% of the area within its boundaries. This won't provide much tax income.

Right now less than one-tenth of one percent of Alaska is privately owned. There are no property taxes other than for schools, public utility districts and municipalities.

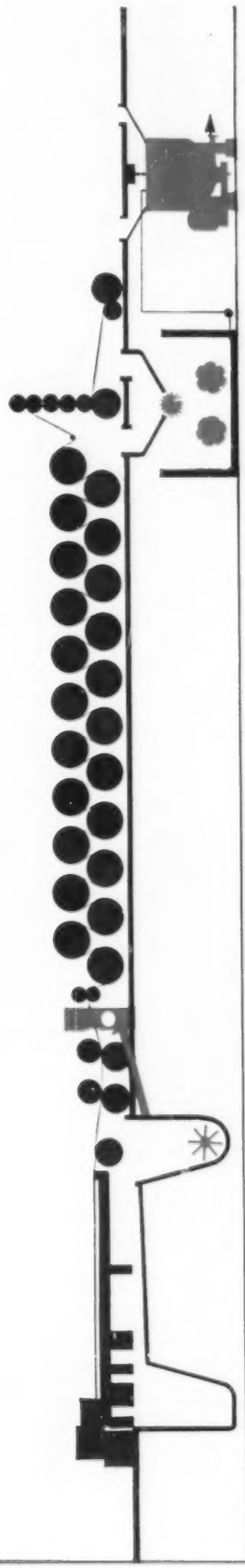
Who owns Alaska? Well, the Department of the Interior has 340 million acres under its administration—some 3,000,000 acres more than twice the whole of Texas! Then there are Alaska's two national forests under the Department of Agriculture, totaling 20,741,000 acres. The rest is chiefly administered by Departments of Air Force, Army and Navy.

Of Alaska's 340 million acre interior, 120 million acres are forested; 40 million acres classified as "commercial" and containing an estimated 180 billion bd. ft. of timber. USDA's current statistics (Timber Resources For America's Future, January '58) cites "Coastal Alaska" (1953 data) as having 4,269,000 acres of commercial forest land containing 89 billion bd. ft. of saw timber.

Alaska's two pulp mills, at Ketchikan and Sitka (latter under construction) are dependent on this timber.

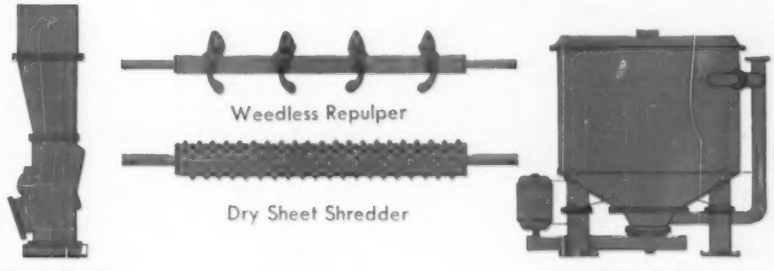
The new state has very little chance of acquiring, for private owners, any of the heavily timbered portions. However, some acceptable selections may have good pulpwood potentials.

On Howard Smith Paper Mills Ltd.'s printed memo forms is this message: "Paper remembers so you can forget." That's a graphic way of expressing what is both the most important and most wasteful use of paper.



IMPCO OFFERS COMPLETE *BROKE PULPING* AT ALL POSITIONS ON YOUR PAPER MACHINE

Over two thousand Impco Agitators for every conceivable mill requirement, both before and after the paper machine, are in successful operation. As pioneer in the designing of such equipment, Impco also regularly builds broke handling devices for various positions under the paper machine. Consequently, such units as Couch Pit Agitators, Sheet and Roped Press Broke Shredders, Dry Sheet Shredders, Solvo Pulpers and Defiberers have been developed. As a result of this mill proven experience, Impco can provide you with either a complete broke handling system or individual components.



Press Broke Shredder

Weedless Repulper

Dry Sheet Shredder

Solvo Pulper

IMPCO® IMPROVED MACHINERY INC.
NASHUA, NEW HAMPSHIRE

In Canada, Sherbrooke Machineries Limited, Sherbrooke, Quebec

PULP

Perkins-Goodwin Co.

Established 1846

PULP AND PAPER MARKETING-MANAGEMENT

589 FIFTH AVENUE, NEW YORK 17, N. Y.

CHICAGO, ILL. • LUFKIN, TEXAS • LOCKPORT, [illegible] • SAN FRANCISCO, CAL. • STOCKHOLM, SWEDEN

PAPER